3/4/28

Vol. XXVI. Part 3.

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The Journal of the Department of Agriculture of Victoria, Australia.

March, 1928.

PRINCIPAL CONTENTS

Cream Deterioration

Crop and Fallow Competitions

Greater Wheat Production

Standard Herd Test—Quarterly Report

Herd Test Records—Their Use and Misuse

Curing Tobacco Leaf

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THE JOURNAL

OF

THE DEPARTMENT OF AGRICULTURE,

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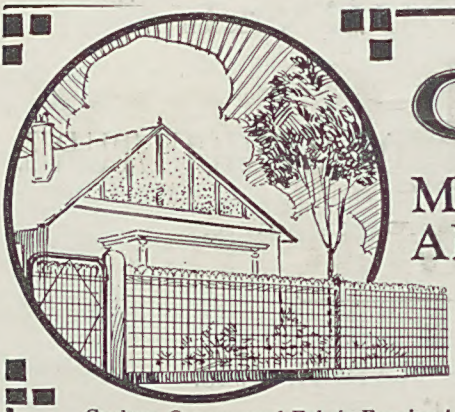

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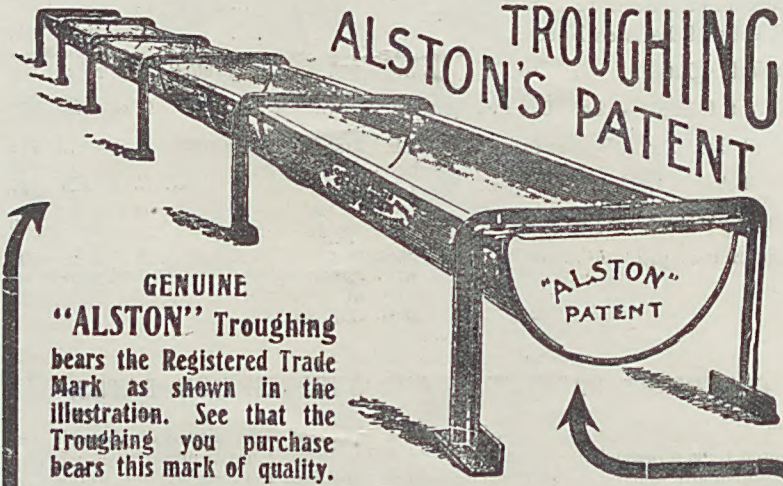

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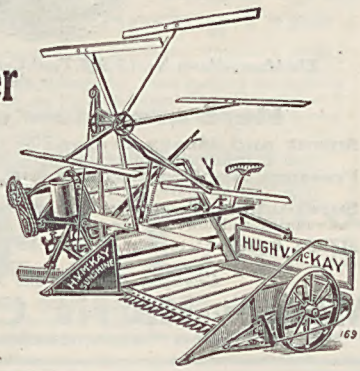

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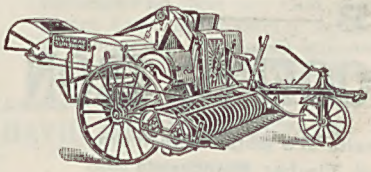

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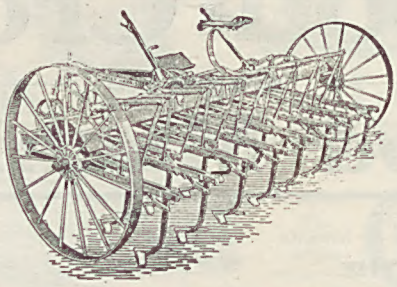

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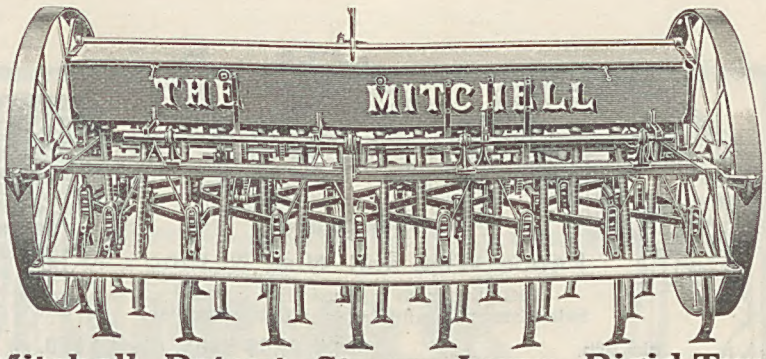

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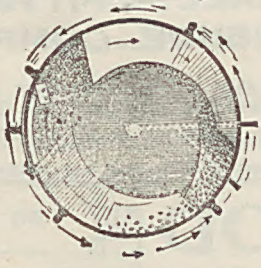

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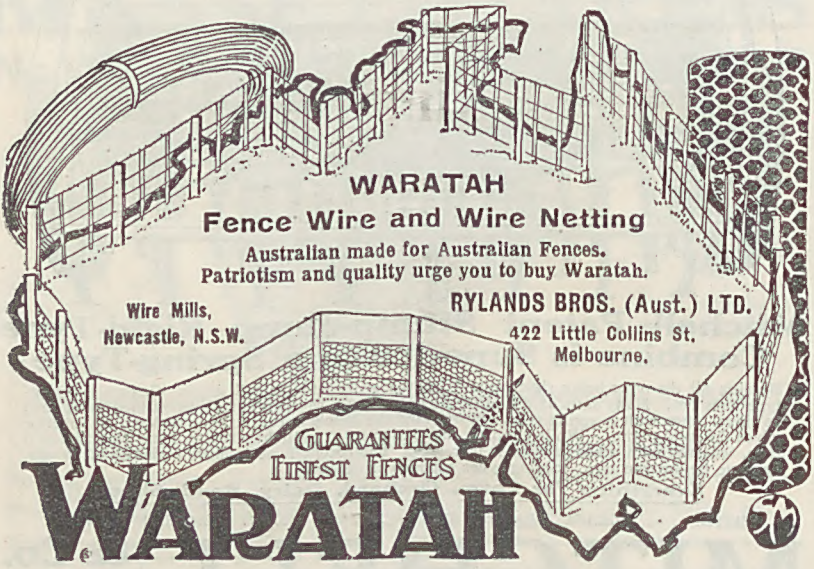

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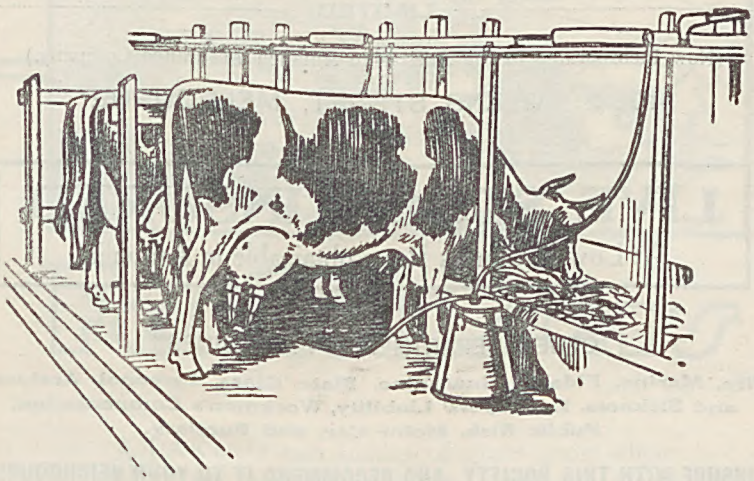

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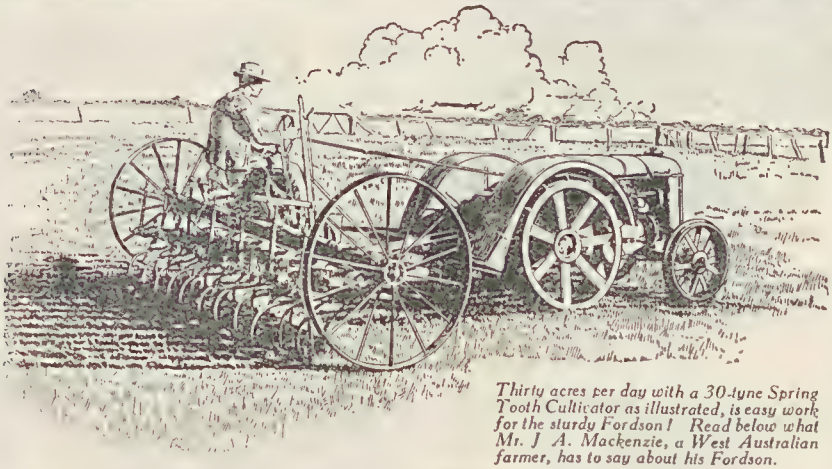

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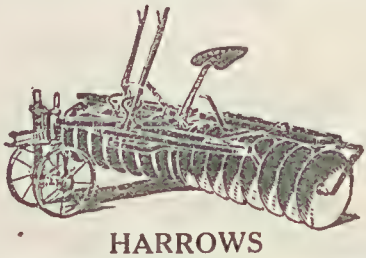

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Vol. XXVI. **March, 1928.** **Part 3**

CREAM DETERIORATION.

METHODS OF PREVENTION.

By J. M. Kerr, Chief Dairy Supervisor.

In considering the factors that make for the deterioration of cream, it is helpful to remember that cream does not consist solely of butter-fat (the pure fat of milk), but is butter-fat with which a considerable quantity of milk is still associated. The fact that cream is minus most of the perishable ingredients of the milk from which it came, certainly makes it somewhat less susceptible to decomposition than is whole milk. But there is still in it quite enough of the more unstable milk constituents (casein and milk sugar) to cause trouble if something is not done to check deterioration. The relative amount of butter-fat in cream will depend on the adjustment of the separator, but cream practically never has more than 50 per cent. butter-fat in it, so that about half any quantity of cream is still ordinary milk, with all of milk's tendency to spoil. A thin cream testing, say, 40 per cent. butter-fat, has even more milk associated with it, and consequently spoils much more readily than a higher testing cream. Making the cream too thin (too low a test) is often a contributory cause of bad keeping quality.

To control the keeping quality of cream it is very important that care should commence at the milking stage. It is quite practicable, even easy, under ordinary circumstances, to check the decomposing process in cream; but to reconstruct cream that has once gone "off" is impossible. Prevention is the rational policy. Hold the cream good while it is good. This is possible to every one, whereas a cream once spoilt baffles the art of even the modern butter factory manager. There is but one thing for him to do—to deduct the value that has gone; and this deduction has, of course, to be made from the farmer's cheque.

When cream arrives at the factory in a bad condition, depend upon it, the cause of the trouble is some distance back, in the course of the cream's production, perhaps even as far back as the milking shed.

Though infection with the ferment of deterioration may be the work of a moment, the actual fermentive deterioration, as the butter factory manager knows it, is never a sudden occurrence; it is always a more or less gradual process. Considerable quantities of cream are saved only by the fact that the factory wagon comes to the farm daily; if it called only on alternate days a great deal of it would be useless for butter-making.

This may appear in the nature of a triumph to the careless individual who supplies such cream, but it is really something to be ashamed of. The true function of the factory pasteurizer is a much more legitimate one than that of being a refuge for unclean cream.

To understand what the pasteurizer is designed to do we must realize that from the moment the milk is drawn from the cow it deteriorates, and this slowly or quickly according to one great main cause—bacterial content. So directly and exclusively is ordinary deterioration the effect of germ activity that the word "deterioration," as applied to milk or cream, has little meaning but "germs." But, of course, there are germs and germs. Yeasts, that help us in bread and wine-making, are germs; moulds, that some people like in cheese, are germs; and there are many other types no more virulent nor dangerous than these. But, though not actually dangerous to adult life, these common air-borne organisms can do much to spoil milk if they are permitted to develop in sufficient numbers. Then there are others which are much more destructive, but which frequent only real dirt, such as putrefying organic matter; and this they will soon make of milk if they get the opportunity. The moral is: If we would prevent cream deterioration we must anticipate the germ. Now, the germ content of the milk is the responsibility of the dairy-farmer. If it is high, the cause will be found in one or the other of two forms of human neglect—either too many germs have been allowed to enter the milk, or the few that have gained entry have been allowed to multiply.

In the healthy udder, milk is practically sterile, and the germs that it is likely to take up in its passage down through the teat are not worth mentioning. The germs which eventually bring about change and ultimate decomposition get into the milk only after it has left the udder. Whether these are to be many or few depends entirely on the trouble taken by the dairy-farmer to circumvent them. There is no wonderful secret in delivering a choicest cream. It needs no more than the simple, age-old expedient of cleanliness, provided, of course, that—(1) the cow is in normal milking condition as regards health and lactation; (2) the food is not exceptional; (3) the cream is not held on the farm an unreasonable time.

If there be delay in delivery to the factory, then even the utmost practicable cleanliness may not be sufficient alone. It will probably have to be supplemented by artificial cooling; it certainly will in warm weather, or in any kind of weather if the storage is to be unduly long. If stored cream be not pre-cooled its existing germ content will multiply quickly, and no matter how few the germs it contains, those few will before long increase to a formidable number.

If every operation in connexion with the production of the article is done cleanly—the degree of cleanliness needs to be no more than is practicable to any dairy-farmer worth the name—the germs that gain access to the product will be few at any stage. Then keep the cream cool and the germs will not increase at a rate sufficient to be very

harmful. Rely on cleanliness to keep the germs out, and on cooling to keep them down. But as the word cleanliness implies different things to different people, I will state in some detail what it means as applied to cream production. It means that the cow's udders should be so clean from free dirt and litter that no foreign matter will get into the milk from that source. The only way to ensure this is to wipe well, or actually wash, the teats (according to the degree of contamination). Only a cloth, which is itself clean, and clean water are of any use for this. In concluding the washing, always wring the cloth and wipe off all the water with it.

Regarding the milker—his hands, at least, must be clean. An extra precaution, even though the hands be washed, is to avoid the common habit of recontaminating the hands by subsequent handling of leg-ropes, bail pins, and dirty parts of the stool before the act of milking is begun. This means that the washing of the hands should be reserved till the last thing before milking. The bucket also must be clean; it must not only look clean, it must be absolutely clean.

Here we come to, perhaps, the most important factor in milk and cream preservation—the cleansing of the utensils. No milk utensil can be declared clean (no matter how clean it looks) unless it has been subjected to an amount of heating sufficient to kill all germs that inhabit it. If the heat used is intense (boiling) a very little while will suffice, but if a lower heat is used, say, only scalding, the time needs to be extended accordingly. It would be well if all utensils could be thoroughly cleansed immediately before use. But this is not practicable in dairy-farm work, and so the next best thing is recommended. This is, that all utensils, after being rinsed free from milkiness, be vigorously washed in luke-warm water, and, so that every corner and crevice in them may be reached, a strong brush should be used, and this brush should be specially reserved for the purpose. Then, finally, they should be thoroughly scalded or steamed. A little washing soda in the wash-water will help, not only because of its germicidal properties, but because of the assistance it gives in removing the initial greasiness common to milk-exposed surfaces.

Seamlessness in utensils is of great value in this connexion, and, really, only seamless buckets, cans, and vats should be used for milk. No one can imagine any dairy-farmer who properly realizes the importance of clean utensils using so ill-designed a thing as a petrol tin as a milk or cream container. The sterilization with heat should be the last act in the washing of a utensil. Never dry by hand a utensil that has been sterilized. It will only recontaminate it. Merely drain it and let it dry by its own heat. Once dry, it should be kept safe for the next using by being placed in an inverted position on a clean rack which allows access of air, but only in an upward direction. This will exclude most air-borne germs, because, in a calm atmosphere at least, the movement of the germ-laden dust particle is mostly downward.

What has been said of the cleansing of utensils applies equally in the case of milking machines. They must be sterilized, troublesome and all as it may be. Inflations, teat-cups, tubing, releaser, pipe-line, and vacuum tank, all must be regularly attended to if a choicest cream is to be supplied. The flushing through with boiling caustic soda solution after each using will suffice to keep them sweet for a few days without taking the pipe-line entirely down; but no system of cleansing them while in position has yet been devised that does not leave it

necessary to disconnect them at least once a week for more thorough cleansing in detail. These precautions will protect the milk till it gets into the separator vat, provided, of course, that the sanitary condition of the milking shed is what it should be. The floor and the atmosphere are the important things here. The former must be kept free from manure, and the latter as free from dust as possible. Quick removal of milk from the atmosphere of the cowshed is a further protecting measure. There should be early separation, so that our next best safeguard (cooling) can be applied at the earliest possible moment.

Next to the neglected milking machine, the neglected cream separator is the greatest source of cream contamination that we have. Now there is nothing in the make-up of a separator itself that will contaminate milk, but dirt or filth will spoil milk in a separator the same as they will anywhere else.

No matter how carefully milk has been strained, it will leave some dust in the bowl of the separator. With the dust there will be many germs, and the slime of the separator bowl is an excellent culture medium for them. It would be well if one could keep this slime removed as fast as it accumulates; yet there are people who do not think it necessary to remove it even after use.

The separator should be given the same preliminary painstaking attention and the same gruelling treatment with heat as has been recommended for every other utensil. A separator bowl that is cleaned only after every two usings cannot by any stretch of imagination be regarded as clean. Rust (oxide of iron) on any utensil—let it be bucket, strainer, vat, separator discs, or any other—makes the action of bacteria much more damaging, because iron combines chemically with acid, and germ products in milk are mostly acid. Rust is thus a particular danger, because the man who is not above using rusty cream cans is generally not above letting his cream get stale or over-acid, and the combination is a particularly bad one. Then, again, in washing, rust-pits in the surface make a good cleansing job impossible.

From the time of separating, our concern is with cream only. This should be cooled direct from the separator (preferably with one of the well-designed small coolers now on the market for the purpose) to a temperature of 70 deg. at the highest. It is surprising how even this comparatively small reduction will arrest the activities of micro-organisms and delay souring and every other form of fermentation.

Be sure the cream can used is clean. Exclude flies at this, as at every other stage. The ideal course would be to take the cooled cream straightway to the factory, and thus deprive whatever organisms are present of their very best ally—time. Quick delivery is good for any cream, but it is absolutely the only chance for some. The necessary storage of cream on the farm before despatch to the factory gives, of course, further opportunity to fermentation by providing one of the indispensables—time. This makes it all the more necessary to withhold such further acids as are represented by dirtiness of environment, foulness of atmosphere, and high temperature in the dairy.

Hold the cream as short a time as possible on the farm, and hold it clean and cool. Cream is not clean that has had either a rat or a mouse in it, so, even in a fly-proof dairy, keep a clean gauze cover on it always. Do not close the can right up, because the type of germ we know as moulds thrives best in a stagnant, stale atmosphere.

There are other common faults of cream, not so far mentioned, which are distinct altogether from those caused by micro-organisms. These are the taints resulting from certain aromatic plants upon which the herd has fed; they also include chemical taints which cream may absorb from strong-smelling substances which may have been too close to it.

The point to remember about the latter is that cream, being largely composed of fat, like all fats, readily absorbs odours or perfumes from the atmosphere. The remedy is to keep such things as petrol, kerosene, eucalyptus, saffronia, phenyle, naphthalene, &c., well away from it. Never use carbolic or eucalyptus ointments on the cow's teats. Also guard against the exhaust fumes from the petrol engine where such is used to drive the separator.

To prevent fodder taints is more difficult. Certainly, never give onions to cows; keep the herd as far as possible off such troublesome things as Cape-weed, carrot-weed, &c.; and where the trouble is caused by such legitimate fodder plants as lucerne, trefoil, clover, rape, or turnips, try to use them in more moderation, toned down by some other safer foods. The aeration which cream is subject to in being run over a cooler will help to remove unpleasant odours. The trouble can always be reduced by taking the cows off any grazing likely to give their milk any taint for some time before milking.

If practicable, also use the offending paddocks only at night, for it is a fact that the effect is always worse when the grazing is done in hot sunshine.

Finally, nothing better can be recommended, in a general way, to prevent the premature deterioration of cream than cleanliness in all things, so as to keep the destroying organisms out, and coolness, as far as practicable, to keep them down.

DOLLAR DISTRICT CALF CLUB.

Result of the 1927 Competition.

By W. J. Yuill, Senior Dairy Supervisor.

In some countries, particularly the United States of America, the Young People's Stock Club movement has assumed big proportions. A few years since a Calf Club was established at Geelong on the American system, one of the requirements of which is that only pure-bred calves shall be permitted to compete.

Four years ago a Children's Calf Club was organized at Dollar, a small dairying district in South Gippsland, 10 miles north of Foster, and approximately 2,000 feet above sea level.

Ian Jones and his Champion Calf.

The organizers of the movement at Dollar, after much consideration, came to the conclusion that it was unlikely that pure-bred calves would be received as gifts, and that it would not be practicable to raise funds for their purchase Rather than abandon the idea, however, it was decided to organize a club on the lines of the Grade Calf Club which was begun at Yinnar South in 1922. The ultimate object of such clubs is to stimulate the interest of young people in live stock, and in this way foster an instinct for rural pursuits, and for this reason the work deserves support.

The growth of the movement in America is probably due to some extent to the cold climatic conditions of some of the States. Where the weather is so severe as to lessen the hours of out-door work and recreation, more time will be given to tending young stock that have to be kept stalled. In Victoria the year round, children are able to indulge in out-of-door sport, and this may partly account for the failure of the Calf Club movement to develop very much here.

Another reason is the great difficulty to get an individual or society to organize a club. It is, I think, essentially a task for an Agricultural or a Progress Society, or a Herd Test Association. At Echuca the Agricultural Society has made the management of a Calf Club one of its functions, while at Dollar, as at Yinnar South, the local State School Committee has carried out the work, with the assistance of the head teacher. Some years ago a Pig Club was successfully carried on. This was followed by a yearly Cow Test record, in which each member undertook to weigh daily the milk of the selected cow, and to take a composite sample of the milk each month to be tested at the school for its butter-fat content. A prize was given for the best essay on "How I Managed my Tested Cow." In these matters, Mr. Allan Savige, the head teacher, was the moving spirit.

The Section Winners.

Although the Dollar school is but a small one (the number of scholars on the roll at present is only 26), twelve calves were entered for last year's club show, which was held on the 14th December in conjunction with the school sports. An interesting feature of the day, in addition to the showing of the competing calves, was the youths' judging section.

The Awards.

A prize of £1 was offered for the champion calf—the champion to be the one securing the highest aggregate points under the three heads—leading, appearance, and dairy type. In addition, prizes were given for the section winners, and a special prize for the best-bred calf.

Keen interest was maintained throughout the judging, for it was possible for a calf not to win a first place in any section and yet be awarded the championship. At the end of the judging it was found that the champion was the calf entered by Ian Jones, which secured a first,

second, and third place. This calf showed a good depth of body, and was well grown and nicely balanced. Hereunder is the prize list:—

Section.	First Prize.	Second Prize.
Champion Calf	Ian Jones ..	
Best Led Calf	Gwen Jones ..	Keith Fixter
Best Appearance	Hazel Jones ..	Keith Murdoch
Best Dairy Type	Jack Lamb ..	Hazel Jones
Best Bred Calf	Hazel Jones ..	

THE CHAMPION CALF.

The points awarded to each calf entered were as follow:—

No.	Owner.	Points awarded for—			Total.
		Leading.	Appearance.	Dairy Type.	
	Possible Points	20	20	20	60
8	Ian Jones	18	19	19½	56½
7	Hazel Jones	17½	19½	18½	55½
1	Gwen Jones	19	18	18	55
5	Jack Lamb	17	18½	19	54½
10	Keith Murdoch	17	19	17½	53½
3	Una Jones	17	18½	17½	53
6	Keith Fixter	18½	17	17	52½
9	Geo. Ware	18	17	16½	51½
2	Allen Peach	16½	17	17	50½
4	Edeline Lamb	17	16	16	49
11	Isobel Jones	16½	16	16	48½
12	Absent				

BEST BRED CALF.

Hazel Jones.

Youths' Judging Competition.

An interesting section was the judging by some of the young people of a calf. The prize in this case was a heifer calf bred by Mr. Luke Jones, who is a member of the School Committee. The dam of this calf, without any feeding on concentrates, achieved a record of 347.8 lb. butter-fat in the Dumbalk Herd Testing Association.

In the first place, the judge indicated the essential characteristics of a dairy cow, and explained how an animal was judged on points. A number of past scholars of the school attempted the task, and the prize was won by W. Ware.

The Value of the Club.

As a result of lessons learnt from the Herd Testing Association, the class of bull being used in the district has improved. At the first show held after the inauguration of the club, the calves exhibited were mostly of the nondescript type; at the recent show the majority were high grade animals.

Club work teaches many valuable lessons. Each child is entirely responsible for the feeding and attention of his calf from the time each year's club is formed until show day—usually a period of from four to six months. During this time they must guard against over-feeding the animal and also against under-feeding.

Training a calf to lead may seem an easy task—particularly when the calf is in the mind to be led—but members have found that it requires a great deal of teaching to make a calf lead smartly and attractively, as is required on show day. A slow-moving, sluggish young animal is usually a poorly-trained one.

There is an old adage, "Impressions made in childhood are not easily erased in manhood." For acquiring a fondness for, and an understanding of young cattle, calf clubs are capable of doing a great deal.

In moving a vote of thanks to those who had helped, Cr. Geo. Jones expressed the opinion that the great value of the Calf Club movement was not fully realized. Quite apart from the work that their small club was accomplishing, it was a good thing for parents, scholars, and friends to meet at their little show. Club work was adding interest to the lives of many children on dairy farms, and he knew the care that members were putting into their work.

LACTATION IN A HEIFER CALF.

An interesting case has recently come under the notice of Mr. J. Close, Dairy Supervisor of the Department of Agriculture, in which an Ayrshire heifer calf, owned by a suburban dairy farmer, has been lactating since birth. The calf is now upwards of three months old. The day after it was born the owner noticed the unusual size and shape of the udder, and on manipulating it found that milk could be quite freely withdrawn. At various times since birth, and up to quite recently, this calf has yielded from a half to one pint of milk a day, but the yield has now (end of February) begun to decline.

Lactation in a virgin heifer is by no means unknown, but it is certainly very uncommon, and rarer still, to find an instance where the yielding of milk began practically from birth.

In view of this unusual circumstance, it was determined to have an analysis of the milk made, to compare its physical properties with those of normal cow's milk. The result of the analysis is as follows:—

Water	87.57 per cent.
Fat	3 per cent.
Protein	3.65 per cent.
Ash	.74 per cent.
Sugar	5.04 per cent.
the total solids thus showing at	12.43 per cent.

The comparative deficiency in fat is rather offset by the somewhat high percentage of sugar, which, under the circumstances, need hardly be regarded as unusual, and, generally speaking, it may be considered that the sample showed no marked difference from that of a normal cow's milk.

NHILL CROP AND FALLOW COMPETITION, 1927.

Report by Judge A. J. Vasey, B.Agr.Sc., Science Field Officer.

The rainfall for the year at Nhill was 10.82 inches, some 5½ inches below the average. The incidence of this rainfall, and the way in which the low rainfall of the previous year had unfavorably affected the moisture conservation in the fallows, combined with extreme weather conditions to reduce greatly the effect of the most modern and advanced methods of wheat-growing.

Early growth in the crops was most satisfactory and encouraging, and many experienced farmers stated that in early September crops had never looked better. However, a very dry month followed, and they suffered severely. The season was not much improved by the light showers of October: and the already unpromising conditions were aggravated by the hot winds at flowering time.

Free Gallipoli "tipped" rather badly. This is probably the natural "safety valve" of this wheat, as it retained more heads per acre than the Federation types after the dry September, but could not finish them all to the normal size. Filling three grains across the "head" was again a prominent feature of this variety. Varieties such as Wannon show an increased resistance to "tipping," but as to whether this is characteristic of the more clubby type of head has not yet been closely studied.

Patchiness in the black land was very marked. This is not necessarily an indication of differing fertility, but rather of slightly varying physical condition, particularly as regards the subsoil. On fallows which last year had been mulched on the shallow side, the better crops on the banks showed the value, in such years, of a somewhat deeper mulch.

Generally, the crops on the Mallee land were better than those on the black ground. Needless to say, these had never shown the early promise of those on the heavier country, but had finished better, being further favoured by a retentive subsoil.

The spring rains throughout the district were light and irregular. It is, therefore, unwise to draw conclusions as to the merits of varying practices in different parts of the district, when the success which had attended them may have been due to a local shower at a critical time.

The Competition, 1927.

Very satisfactory entries were received in all sections except the "red ground" classes. It is to be regretted that more interest has not been taken in these classes. Unless the same attention is paid to the working of this type of ground as has in the past been concentrated on the black, improvement in the methods of its cultivation is likely to be greatly delayed. It is to be hoped that the red ground as a bar to the maximum production of the district will be largely overcome as the benefits to be gained from the use of gypsum are more widely appreciated. The institution of the Lienert-Todd Cup Competition this year should do much to help in this direction.

Details of Awards.

Section 1.—Best Half (at least 75 acres) of Wheat Crop.

Competitor.	Variety.	Yield.	True-ness to type.	Absence of Weeds.	Absence of Disease.	Even-ness.	Total.
Possible Points ..	.. .. ..	**35**	**20**	**15**	**15**	**15**	**100**
H. H. Sanders ..	Wannon, Federation	35	18	14	14	15	96
C. Dahlenburg ..	Wannon, Federation	31	20	14	14	14	93
P. W. Pilgrim and Moulden	Free Gallipoli ..	31	17	13	13	13	87
R. Blackwood, Jnr.	Free Gallipoli ..	25	19	13	14	14	85
E. H. Rowe ..	Federation, Rajah, Currawa	26	18	14	13	14	85
J. and T. W. Rintoule	Federation, Nizam ..	27	17	13	14	13	84
E. Reichelt ..	Free Gallipoli ..	23	19	14	13	14	83
F. W. Kluge and R. Blackwood	Federation, Wannon, Free Gallipoli	25	18	13	14	12	82
E. W. Dahlenburg	Nizam, Free Gallipoli	12	20	14	15	14	75
C. H. F. Reichelt	German Wonder, Quality, Wannon	11	18	14	14	14	71

The crops comprising the ten entries in this section might almost be grouped into three classes, as indicated by the yield markings, so great was the variation in different portions of the district this year. First place is awarded to Mr. H. H. Sanders, 95 points; second, Mr. C. P. Dahlenburg, 93 points; third, Messrs. Pilgrim and Moulden, 87 points.

Without wishing to detract in any way from the merit of the winning crop, it is only fair to state that it was grown in the Kaniva district, which received some 5 inches more rain for the season than the areas closer to Nhill. The same applies to a lesser extent to the crops gaining the second and third awards, in that they were more favoured by the incidence of the spring showers.

Mr. Sanders's winning entry was of Wannon and Federation wheats, of which the former variety looked the better crop by at least a bag to the acre. Type was good but for a few isolated heads of barley. While the Federation was practically free from disease, a light infection of both loose smut and flag smut was noticed in the Wannon. Evenness was good, and the drilling throughout showed signs of careful work. Cultivation given the land was as follows:—Ploughed with the sundercut in March; harrowed in May; scarified in June; cross-scarified in July and again scarified in August; cultivated in September and again in November; harrowed in February; scarified in March; cultivated and harrowed in May; combined in and harrowed first week in June. Seed (dry-pickled), 75 lb., and 93 lb. of 24 per cent. superphosphate per acre. Mr. Sanders does not regard this as standard fallow treatment, but the above workings were given in an effort to clean up a paddock very dirty with wild oats. The success of these methods was quite apparent in a clean crop this year.

Mr. Dahlenburg's entry also consisted of Wannon and Federation. The former variety was concentrated on the black ground of the paddock while the Federation had been sown on the red rising ground, which had

been treated with gypsum with marked success. In both cases a good thick even crop was produced, of excellent type. Very few wild oats were noticed, while a light infection of loose smut in the Wannon was responsible for the loss of one point under this head.

No other entry had been treated so successfully after sowing to meet seasonal conditions than Messrs. Pilgrim and Moulden's crop of Free Gallipoli. On what might be termed standard summer fallow, it had been seeded with 57 lb. of seed and 68 lb. of superphosphate per acre. Consequently the crop was rather thin from the start. Nevertheless, it was harrowed and then fed off. So effectively did this method check the vigorous early growth that, despite the dry season, the crop was absolutely normal, and, as a matter of fact, was still green at the time of judging. While yielding well, type was not good, wild oats were rather prominent, and evenness was only fair.

Of the remaining crops in this section, those marked in the twenties for yield were very fair crops considering the season. On very heavy black country, the exhibits of Messrs. E. W. Dahlenburg and C. Reichelt were only the remains of what in a normal season would have been magnificent crops.

From a general observation of the varieties shown in this class, it would appear that Wannon was the most drought-resistant of the Federation types on black ground. This view is further supported by the results of the Salisbury plots this year.

Section 2.—Best 100 Acres of Wheat on Mallee Land.

Competitor.	Variety.	Yield.	Trueness to Type.	Absence of—		Evenness.	Total.
				Weeds.	Disease.		
Possible points ..	.. .. ..	**35**	**20**	**15**	**15**	**15**	**100**
R. L. Buckley ..	Free Gallipoli ..	35	18	13	12	13	91
Beacom Bros. ..	Free Gallipoli ..	32	19	12	14	13	90
Beacom Bros. ..	Federation ..	30	19	13	14	13	89
E. H. Rowe ..	Federation, Rajah, Currawa	26	18	14	13	13	84
J. H. Brown ..	Ranee	23	16	14	12	13	78
R. D. Buckley ..	Free Gallipoli ..	21	18	12	13	12	76
J. C. Buckley ..	Federation ..	18	18	12	13	13	74
E. H. Simmering ..	Rajah	21	17	12	12	12	74
T. G. Marshall ..	Federation ..	21	16	12	12	11	72

The winning crop in this section was shown by Mr. R. L. Buckley, who was awarded 91 points. Of Free Gallipoli variety, it promised a very satisfactory yield. The presence of strangers meant the loss of two points for type. Wild oats were noticed, as also was a light infection of flag smut and take-all. The crop had been sown with the combine at the end of May with 80 lb. of seed and 90 lb. of superphosphate on winter fallow, which had received the following workings:—Ploughed at the end of July with the sundercut, and spring-toothed in the spring. The next working was in May, and consisted of a further spring-toothing.

Messrs. Beacom Bros. showed both second and third awards in this section. Their crop of Free Gallipoli was of very good type, and promised

to yield well. It was, however, very uneven, and showed a considerable weed infection—chiefly wild oats—in the lower, and consequently wetter, portion of the paddock.

The Federation was the second crop of wheat to be sown on new Mallee land. It showed the high colour characteristic of this variety on fresh country. Type was again good, but wild oats were also prominent. Workings for these crops were as follows:—

For the Free Gallipoli.—Ploughed with the mould-board from 2½ to 3 inches in July, and harrowed both ways immediately afterwards. The low-lying portion of the paddock was worked with the scarifier, and the remainder with the spring-tooth cultivator in October; then harrowed in December; spring-toothed again in May, and sown with 70 lb. of dry-pickled seed and 90 lb. 22 per cent. superphosphate in June with the combine.

For the Federation.—Ploughed with the mould-board from 2½ to 3 inches in July, and twice harrowed immediately; left till May, when it was worked up with the spring-tooth; sown in June at the rate stated above for the Free Gallipoli.

Section 3.— For Best 100 Acres Fallowed Black Land.

Competitor.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	**25**	**25**	**25**	**25**	**100**
John Coutts	24	24	25	23	96
H. H. Sanders	24	24	23	24	95
R. C. Blackwood	23	23	25	23	94
E. W. Dahlenburg	22	22	25	23	92
Hutchings and Sanders	23	22	25	22	92
B. Dufty	22	22	25	22	91
E. Reichelt	23	23	23	22	91
J. and T. Rintoule	22	22	25	22	91
F. W. Kluge and Blackwood (1)	22	22	25	22	91
C. Reichelt	23	21	24	22	90
Reg. Dickinson	21	21	25	20	87
W. S. Blackwood	20	20	25	21	86
C. P. Dahlenburg	19	22	25	19	85
P. Bone	21	20	23	20	84
F. W. Kluge and Blackwood (2)	20	20	24	20	84
C. Cummings	19	19	25	18	81
E. G. Hoffmann	20	18	23	17	78

For this section entries were again good, no less than seventeen being received.

First place was awarded to Mr. J. Coutts, with 96 points; second, Mr. H. H. Sanders, 95 points; third, Mr. R. C. Blackwood, 94 points. Once again the first and second awards go to the Kaniva district, where a more favorable season provided practically normal conditions for the preparation of the fallows. Mr. Blackwood may be regarded as having obtained first place among the fallows of the Nhill district, which were prepared under much dryer conditions.

Mr. Coutts's entry consisted of 100 acres of even black land, and was a very fine Wimmera fallow. The mulch was good and the amount of

moisture conserved below was high. The seed-bed was in good condition, though showing a slight tendency to unevenness. There was a complete absence of weeds.

The land had been worked as follows:—Ploughed with the prong boards in April; harrowed the last week in May; cultivated and harrowed in late June; scarified in August and again harrowed; cultivated in September, and harrowed with further harrowings in November and December. It must be emphasized that more favorable seasonal conditions allowed Mr. Coutts to prepare his fallow by practically normal methods. Similar methods, practised under dryer conditions, on the areas nearer Nhill were not attended by the same success.

Mr. Sanders's fallow had been ploughed from grass with the sundercut, and then left till June, when it was scarified; crossed with the scarifier in July, it was then harrowed. In September it was cultivated, and again in November. Mulch and moisture were very good indeed, as also was the seed-bed. Rather than endanger his mulch, Mr. Sanders did not harrow to kill any late weeds, and points were lost under this head.

The fallow exhibited by Mr. R. C. Blackwood was typical of what might be attained by suitable modification of methods to meet seasonal conditions. Ploughed from stubble with the sundercut 4 inches deep in March, it was harrowed in April. The next working was in June-July, when it was scarified across the previous working, and then later in July it was cultivated across the scarifying. No further workings were given till October, when it was again scarified. While the mulch was rather deeper than is usually desirable, the seed-bed, though inclined to be bumpy in places, was in exceptionally good order, and contained a good percentage of moisture No difficulty should be experienced in raising the bed by judicious working when the weather definitely breaks. The fallow was completely clean of weeds.

The fallow exhibited by Mr. E. W. Dahlenburg in this section was in two blocks—one paddock of 85 acres and an adjoining 15 acres of another. The former area was, on account of a rather shallower mulch, starting to dry and crack in the seed-bed. A tendency towards unevenness was also noticed The smaller area, however, was in excellent order throughout. As will be seen from the following details, the only difference in the workings was an extra harrowing given the larger paddock in September to deal with the sheep weed. Both areas were ploughed with the sundercut in March, cultivated the first week in July, scarified in August, and cultivated in November.

Many other very creditable fallows were shown in this section.

Section 4.—Best Wheat Crop Grown on Red Fallowed Land, the Fallow to be Judged on Points 1926, and the Crop Grown on this Fallow to be Judged on Points 1927, Fallow and Crop Points to be Added Together.

Only one competitor remained in this section, Mr. R. Dickinson, who showed a fair crop of Federation. Weed infestation, however, was bad, and in a rather uneven crop the diseases of loose smut and take-all were noticed. Points awarded were:—Yield 35, trueness to type 17, freedom from weeds 11, freedom from disease 12, and evenness 12, total 87. With the 79 points gained last year for fallow, this makes a grand total of 166 points out of a possible 200.

Section 5.—For the Whole of a Farmer's Fallow, 1925, and the Crop on the said Fallow, and the Fallow for 1926, and the Crop on the said Fallow, 1927.

Competitor.	Total Fallow, 1925.	Total Crop, 1926.	Total Fallow, 1926.	Total Crop, 1927.	Grand Total.
Possible Points	**100**	**100**	**100**	**100**	**400**
R. Blackwood, Jnr.	92	95	93	89	369
A. Dahlenburg	90	86	94	94	364
E. J. Hoffmann	86	80	92	92	350
E. W. Dahlenburg	84	88	95	79	346
F. W. Kluge and R. Blackwood ..	87	87	85	83	342
J. and T. W. Rintoule	87	80	92	81	340
C. Reichelt	88	75	92	79	334

This section is concluded this year with the judging of the crops, for details of which see Section 6.

After a very consistent performance over the whole period of the competition, Mr. R. Blackwood, jun., gained first place with 369 points. His record is first for fallow, 1925; first for crop and third for fallow in 1926; and third for crop this year.

Mr. A. Dahlenburg, with a very meritorious win in the crops in 1927, is second, having pulled up five points on the winner since last year. Coming second in the crops this year, Mr. E. J. Hoffmann rises to third place. The remaining competitors in this class, with Mr. Peter Bone, comprised those who were hardest hit by the season as regards crops on high class summer fallow.

Section 6.—For the Whole of a Farmer's Fallow, 1926, and the Wheat Crop Grown on the said Fallow, 1927.

Competitor.	Area.	Total Fallow, 1926.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total Crop, 1927.	Grand Total.
Possible Points	..	**100**	**35**	**20**	**15**	**15**	**15**	**100**	**200**
	acres.								
A. Dahlenburg ..	338	94	33	19	14	14	14	94	188
E. J. Hoffmann ..	190	92	35	17	13	14	13	92	184
R. Blackwood, Jnr. ..	165	93	30	19	13	14	13	89	182
E. W. Dahlenburg ..	280	95	18	19	14	14	14	79	174
P. Bone	260	93	26	18	12	12	12	80	173
J. & T. W. Rintoule ..	214	92	26	19	13	11	12	81	173
C. Reichelt	100	92	19	18	14	14	14	79	171
E. Reichelt	200	84	28	19	14	13	13	87	171
F. W. Kluge & R. Blackwood	270	85	28	19	12	12	12	83	168
R. D. Buckley ..	378	85	28	18	12	13	12	83	168

On the area exhibited by Mr. A. Dahlenburg in this section, three varieties were grown. In one paddock—120 acres of black land—a very fine crop of Wannon and Federation was shown, with the former variety rather the heavier crop. Type was good, but a few wild oats were present, and a light infection of loose smut was noticed in the Wannon.

On another 100 acres of similar land, Free Gallipoli, while a clean, pure crop, had "tipped" badly. On red loamy rising ground fair crops of Federation and Free Gallipoli were seen; but a sprinkling of strangers in a small area of this latter variety meant the loss of a point on type. The crop had been sown in June on well-worked winter fallow at the rate of 73 lb. of dry-pickled seed and 112 lb. of superphosphate per acre.

Federation, Wannon, and Free Gallipoli were again the varieties shown by Mr. E. J. Hoffmann in his entry in this section. The Free Gallipoli (80 acres) was a very fine crop, as also was the 20 acres of Federation in the same paddock. The presence of strangers and barley lost points on type, while some weeds were seen. Flag smut was also noticed to a slight extent. The entry also included fair crops of Federation and Wannon on rising ground. Seeding took place early in June at the rate of 75 lb. of seed (dry-pickled) and 80 lb. of superphosphate per acre on well-worked summer fallow.

Mr. R. Blackwood's entry included a fair crop of Free Gallipoli of very good type. Points were lost for the presence of wild oats and a slight infection of loose smut. A smaller area of Nizam did not promise so well at the time of judging, but had the same high purity as was noted in the Free Gallipoli. Combined-in in June on summer fallow after a previous cultivation in May, 85 lb. of seed and 140 lb. of superphosphate were applied per acre.

Section 7.—For the Whole of a Farmer's Fallow, 1926, and the Crop on the said Fallow, and the Fallow for 1927, and the Crop on the said Fallow, 1928.

Competitor.	Total Fallow, 1926.	Total Crop, 1927.	Total Fallow, 1927.	Progress Total.
Possible Points	**100**	**100**	**100**	**300**
R. Blackwood, Jnr.	93	89	94	276
E. W. Dahlenburg	95	79	93	267
E. J. Hoffmann	92	92	81	265
J. and T. W. Rintoule	92	81	90	263
E. Reichelt	84	87	91	262
C. Reichelt	92	79	88	259
P. Bone	93	80	83	256
F. W. Kluge and R. Blackwood ..	85	83	87	255

Details of the markings for the crop and fallow will be found in Sections 6 and 8 respectively.

Mr. R. Blackwood, jun., once again leads in this section. His performance to date includes a second to Mr. Dahlenburg in the fallow last year, another second to Mr. Hoffmann in the crops this year, and the first place for fallow, 1927.

Having had a very creditable fallow in 1926, Mr. E. J. Hoffmann gains first place in the 1927 crop. This year's fallow was not so good. Owing to the absence of weed growth on the paddocks, no early scarifying was given, and in consequence little consolidation of the seed-bed had been effected.

Two very high awards for fallow, 1926 and 1927, enabled Mr. E. W. Dahlenburg to obtain second place despite his disappointing crop this year.

Section 8.—For the Whole of a Farmer's Fallow, 1927, and the Wheat Crop Grown on the said Fallow, 1928.

Competitor.	Acres	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	..	**25**	**25**	**25**	**25**	**100**
H. H. Sanders	220	24	24	23	24	95
R. C. Blackwood	150	23	23	25	23	94
E. W. Dahlenburg ..	345	23	22	25	23	93
John Coutts	270	22	24	25	21	92
E. Reichelt	215	23	23	23	22	91
J. & T. W. Rintoule ..	285	22	21	25	22	90
C. Reichelt	375	22	21	24	21	88
C. P. Dahlenburg	280	20	21	25	21	87
R. Dickinson	200	21	21	25	20	87
J. R. Coutts	95	20	23	25	19	87
P. Bone..	380	20	20	23	20	83

In addition to the black ground shown by Mr. Sanders in Section 3, his entry for the whole fallow also included a paddock of loamy red ground. This was in excellent order, but lost points for scattered weed growth. Workings were given as follows:—Ploughed June, harrowed July, cultivated deep in August, and crossed with the same implement in November.

Mr. R. C. Blackwood's entry in this section received the same points as in Section 3, an indication of the high standard of the whole of the fallowing operations. The same applies to that of Mr. E. W. Dahlenburg. Mr. J. Coutts showed, in addition to his black ground, 140 acres of mixed country, which was not in the same excellent order as his entry in Section 3.

Mention might here be made of a fact first noticed on the property of Messrs. J. and T. W. Rintoule, and thereafter throughout the competition. This was that the winter fallows quite obviously did not contain such a high percentage of moisture as the summer fallows on the same property.

As no competition for red ground fallow was conducted this year apart from the Lienert-Todd trophy, this class of country was inspected under Section 8, and Mr. C. P. Dahlenburg deserves special mention for his very fine fallow on such ground.

Section 9.—For the Best Wheat Crop not less than 50 Acres, Grown on Red Fallowed Land.

Competitor.	Variety.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.
Possible Points ..	.. .. ..	**35**	**20**	**15**	**15**	**15**	**100**
J. R. Coutts ..	Federation ..	35	17	14	13	13	92
C. Dahlenburg ..	Federation and Free Gallipoli	30	20	13	13	13	89
R. Dickinson ..	Federation ..	24	17	11	12	12	76
T. G. Marshall ..	Federation ..	21	16	12	12	13	74

Mr. J. R. Coutts is the winner in this section with 92 points. While his crop of Federation promised to yield well, type was only fair, and odd heads of barley were noticed. It also contained a light infection of loose smut. The land was prepared for this crop by the following workings:—Ploughed June and July; harrowed twice in August; spring-toothed in September, and scarified during the second week in October. Sown in May at the rate of 60 lb. of seed and 90 lb. of superphosphate per acre, it was then harrowed, and later fed off in the first week in July.

Mr. Dahlenburg's entry included Federation and Free Gallipoli varieties. A very nice crop of Federation was shown; it has been described in Section 1. The Free Gallipoli suffered severely from weed growth, chiefly wild oats.

Section 10.—For Best 50 Acres of Crop on Red Fallowed Land, of which the Exhibitor was Allowed to Dress with Gypsum any Portion not Exceeding 25 Acres, the said Fallow having been Judged in 1926.

Only two competitors remain in this section. Mr. W. S. Blackwood showed the better crop of Nabawa, which promised a satisfactory yield, though in type it was rather the inferior of other crops seen on this property. The difference in the crop on the land treated with gypsum was most marked, and fully justified its application.

In Mr. Dickinson's case no gypsum was applied. The crop has been described under Section 4.

Competitor.	Yield.	Type.	Absence of—		Even-ness.	Total Crop, 1927.	Total Fallow, 1926.	Grand Total.
			Weeds.	Disease.				
Possible Points	**35**	**20**	**15**	**15**	**15**	**100**	**100**	**200**
W. S. Blackwood ..	35	18	14	14	13	94	88	182
R. Dickinson	33	17	11	12	12	85	79	164

The Lienert-Todd Trophy.

To Promote the Better Working of Stiff Red Soils.

Conditions of Competition.

Competitors will be required to set aside 10 acres of stiff red land, and after fallowing it divide it into two equal-sized portions, each containing as far as possible a uniform area of stiff red soil, and in the event of there being other patches of soil present, those patches to be uniformly distributed between the two areas.

Each portion of the fallow shall be treated similarly, and in autumn or spring of the first season one portion to be treated on the surface with gypsum at the rate of 30 cwt. per acre. At seed time the whole of the area is to be seeded with the same variety of wheat of the farmer's own choosing, drilled on the same day, at the same rate of seeding, and with the same quantity of superphosphate per acre; and in all other respects the land shall be equally treated.

At hay-cutting time a binder track shall be cut between the two plots, separating them, and later the produce of each field shall be carted to the weighbridge in separate loads, and the weighbridge ticket furnished to the judge.

The area of crop harvested in each of the two fields shall be measured after harvest in the presence of a rival competitor. The scale of points shall provide for the judging of the crop and fallow in the ordinary way, with additional points for the selection of uniform land and general conduct of the experiment.

Keen interest has been aroused by the institution of this competition, for which, although there were twelve entries received, only eight exhibits were judged. The difficulty of obtaining suitable areas of fairly uniform red ground was the reason for the withdrawals. The competitors will now have some idea of the problems of this nature which are met with in the laying out of the departmental experimental plots. It is gratifying to note the widespread appreciation of the fact that no indication can be gained of the improvement due to the application of gypsum unless the yield from a reliable check plot is also available for comparison. The red ground in this district is not by any means of the same type throughout, and the entries accepted cover a wide range of soils, from stiff intractable clays to more easily-worked loams. Needless to say, the increase in yield due to the gypsum treatment cannot be expected to be of the same order in each case, but some degree of corroboration may reasonably be looked for on soils of similar type.

Details of Award.

Competitor.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	**25**	**25**	**25**	**25**	**100**
C. P. Dahlenburg (1 and 2)	21	21	24	22	88
R. G. Anderson	21	21	24	20	86
A. J. T. Hall	20	20	24	20	84
E. Muller	20	20	23	20	83
T. G. Marshall	19	20	25	19	83
P. J. Smith	19	19	25	19	82
P. Hann	18	18	25	18	79
A. J. Pilgrim	19	19	21	19	78

Of the above entries those of Messrs. Dahlenburg, Hann, Smith, Pilgrim, and Marshall are situated on soils of the clayey type. The remainder, those of Messrs. Anderson, Hall, and Muller, tend rather to loams.

Mr. Dahlenburg's entries had been prepared by the following workings:—The harrows followed the plough during the first and second weeks of July, and further cross-harrowings were given immediately. Later cultivations were with the "combine" in August and October. Mr. Dahlenburg had thus obtained a mulch which, though rather on the rough side, was of good depth. In common with the other winter fallows of this year, the moisture percentage in seed-bed and subsoil was not high. A few plants of barley grass were noticed.

The fallow exhibited by Mr. R. G. Anderson was on loamy ground. The mulch was in fair order, but shallow. The seed-bed was rather

uneven, and on the dry side. Barley grass was present here also. Ploughed early in July with the mould-board, 3½ inches deep, it had been left till August, then cross-harrowed. The last working was with the spring-tooth at the end of the same month.

The importance of preventing the formation of clods on this stiff red ground by early harrowings after the plough is stressed. Prevention in this case is better than cure.

Competitors in this section were advised, where possible, to make their plots long and narrow. Research work conducted by the Department shows that the results from a pair of plots of this shape are more accurate than those from short, square plots.

Some observations on gypsum-treated country this year may be mentioned here. Red patches in Mr. R. C. Blackwood's black land had been so treated. In addition to a decided improvement in the mulch, differences in the seed-bed were also noticed; it was moister and the texture much better than that of untreated ground. This was probably the result of more effective mulching by the surface soil, as well as of the direct action of the gypsum on the subsoil. The factor of decreased depreciation on expensive harvesting machinery is yet another point in favour of a more general use of gypsum. In this connexion, Mr. P. Bone noticed this year that the gypsum-treated red land appeared to be less severe on the header than untreated red land.

In conclusion, I wish to thank Mr. C. H. Towns, the secretary of the Society, for his many kindnesses, and the competitors for the hospitality so generously given.

CROP COMPETITIONS IN NORTH-EASTERN VICTORIA, 1927.

Report of Judge, W. B. Miller, B.Agr.Sc., Manager, State Farm, Rutherglen.

Wheat-growing takes a prominent place in mixed farming in North-Eastern Victoria. Though the greater part of this large section of the State is used for dairying, fattening, and general sheep-raising purposes, there are many districts, chiefly on the western side of the Benalla-Albury railway line, where wheat-growing is profitably practised.

During 1927, whilst the main wheat belt has been comparatively drought-stricken, North-Eastern Victoria has enjoyed one of the best years on record. The 42 crops inspected in the Rutherglen, Wangaratta, and Benalla crop competitions were estimated to give an average yield of 9 bags per acre, and harvest returns have shown that many crops yielded up to and in excess of expectations, whilst yields up to 15 bags per acre have been reported.

The average annual rainfall for the district ranges from 21½ inches at Rutherglen to 26½ inches at Benalla. In the hills at Glenrowan and along the Broken River, near Goomalibee, it is higher still. However, 1927 was a dry year, and the rainfall ranged from 15 inches at Rutherglen to 17 inches at Benalla. The outstanding feature of the rainfall was the magnificent October rain.

Following a long dry autumn, many crops were sown on a dry seed-bed. During a very cold and frosty June they made little headway, and

the following rains in July, August, and September were barely sufficient to maintain growth, and by the end of September many Rutherglen crops had turned brown at the tips. With 2½ to 3½ inches of rain in October, a wonderful recovery took place, and a prospective drought gave way to a bountiful season. Even crops sown on stubble land yielded up to 21 bushels per acre, and a plot of wheat at the Rutherglen Experiment Farm, sown without manure, yielded at the rate of 26 bushels per acre.

Sowing Conditions.

In these districts of high rainfall, failure of a crop takes place more often during early growth than in the spring. It may be due to a poor germination, to waterlogging, or to excessive weed growth, and the result is always a thin and patchy crop. Light yields are more often due to thin crops than to heavy or rank ones failing to mature.

For this reason, 75 lb. of dry-pickled seed per acre may well be sown in any year, and a liberal dressing of superphosphate—up to 1 cwt. per acre—should be profitable. Particularly is this so in heavy rainfall country when the residual effect of the manure is shown by the increased growth of grasses and clovers in the stubbles. The average quantities used by the 42 competitors in the Rutherglen, Wangaratta, and Benalla competitions was 69 lb. of seed and 90 lb. of superphosphate per acre.

Feeding off the the forward crops by sheep is often beneficial. Should the September rains be light, however, the crops may not completely recover. During this season some farmers on the heavier land left the sheep on their crops too long, even during September, with consequent reduced yields.

Cultivation Methods.

If wheat grown on new land be excepted, nearly all the heavy crops were sown on well-cultivated fallow, i.e., fallow ploughed early, and given at least one thorough cultivation before harvest time. The relation between cultivation practice and wheat yields may be clearly seen from the results of cultivation trials at the Rutherglen Experiment Farm.

Cultivation Trials—Rutherglen.

Plot No.	Treatment.	Average Yield per acre for Periods—		
		1917–22.	1917–27.	1927.
1	Ploughed 3 inches deep in July and cultivated ..	15·6	18·4	35·0
2	Ploughed 5 inches deep in July and cultivated ..	18·0	23·1	43·4
3	Ploughed 7 inches deep in July and cultivated ..	19·3	24·6	42·5
4	Ploughed 5 inches deep in July and left in sod till sowing time	15·3	14·2	28·3
5	Ploughed 5 inches deep in October and cultivated	15·8	17·9	24·5
6	Ploughed 5 inches deep in October and not cultivated	15·6	16·4	23·5
7	Ploughed just prior to sowing	9·6	10·0	16·5

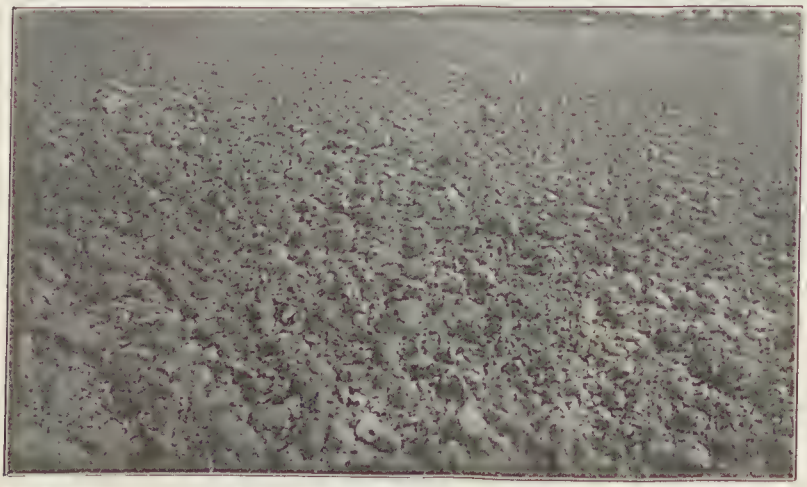
N.B.—The early-ploughed plots were generally cultivated twice before harvest, and once in the summer. All plots were sheeped to keep down weed growth as on a normal fallow.

Conclusions.

It is seen that if the fallow be well worked it is profitable to plough as early as possible (compare the results from plots 2 and 5, as shown in the table above), and that if no subsoil be turned up, ploughing to a depth of at least 5 inches should be aimed at (compare the returns from plots 1 and 3). If the land be left uncropped for a year and then ploughed in the autumn, it will yield only about one-half of what it would yield if the ground had been fallowed (compare yields from plots 2 and 7).

It is not possible in this experiment to compare fallow ground with land that has been in grass for years. Probably one-third of the area sown to wheat in the North-East is stubble or lea ground.

A comparison of the figures in the first and second columns of the above table will show that the better cultivation methods of plots 1, 2,



Desirable condition of fallow at Rutherglen Experimental Farm in Spring time.
The soil is a grey loam, which must not be worked down too fine early in the fallowing season.

and 3 have resulted in greater maintenance of soil fertility than have those used on plots 5 to 7, e.g., for the first six years of the experiment the average difference between plots 2 and 4 was 2.7 bushels. It is now 8.9 bushels. When considering cultivation methods in the North-East, it must be remembered that a cloddy mulch is the ideal. If worked too fine, nearly all the soils will set down hard after rain.

BENALLA CROP COMPETITION, 1927.

The Benalla Agricultural Society was the first society in the North-Eastern and Goulburn Valley districts to conduct a crop and fallow competition. This influence has now extended throughout that part of the State with beneficial results.

Amongst the twelve entrants this year the names of Mr. H. Hill and Mr. D. Smith appear, as they did in the first competition in 1921, and it is hoped that this year's competitors will follow their example and maintain interest in the competitions, which are so valuable to the district.

No fallow competition was held in 1926. It is significant that all the crops entered in the crop competition were grown on fallow, even in a district with an average annual rainfall of 26½ inches. In favorable years a considerable area of wheat is profitably sown on stubble and lea land, but it is the opinion of many experienced Benalla farmers that the fallow crop is more profitable.

The crops of Mr. A. L. Guppy, at Goomalibee, and Mr. R. A. Sadler, at Taminick, were the heaviest seen in the competition. The former crop was given full points for apparent yield, and has since been reported by Mr. Guppy to have yielded 15 bags per acre—a wonderful result from grey soil. Mr. Sadler's crop of Turvey, although not quite so heavy, was more even and cleaner than Mr. Guppy's, thus enabling it to win by one point. This crop was placed third in the Wangaratta competition. It was grown on part of the few thousand acres of red, loamy, and sandy soil to be found on the sides of the hills at Taminick.

Mr. R. O. Sadler's Winning Crop of Turvey.
A Very Dense Crop.

The grey heavier soils, lower down on the flats nearby, did not yield so well. The crop was very even, thick, and well-headed, though rather too tall and liable to lodge. The wheat was practically pure, save for traces of loose and ball smut, for which three points were deducted.

The light Taminick soil is not typical of the Benalla district, and Mr. Sadler's cultivation methods cannot be applied to the grey, cementy loams. The sandy loam at Taminick does not set very hard after rain, and hence may be worked down to a fine tilth, as is done on the black soils of the Wimmera. The fallowing took place early in July, and then the cultivations were as follows:—Harrowed in July, spring-toothed deeply in August, harrowed in September, spring-toothed in November, harrowed in December, spring-toothed and harrowed in January, and sown with the combine late in May with 80 lb. of dry-pickled seed and 100 lb. of superphosphate per acre. The crop was fed off lightly until the end of August.

Mr. Guppy's crop was grown on fallowed grey loam, situated near the banks of the Broken River, at Goomalibee. The paddock had been

cropped fairly regularly for the previous 45 years, and has produced four crops of wheat during the last seven years.

Mr. Guppy's success may be partly attributed to the thoroughness of his cultivation methods. He ploughed 5 inches deep in June, and harrowed immediately. The rigid tyne combine, with 5-inch points, then scarified the field in September, and again crossways in October, leaving the fallow with a nice cloddy mulch. The sheep kept the fallows clean until May, when the combine was used to sow 85. lb of dry-pickled seed and 90 lb. of superphosphate per acre. The harrows followed the drill, and the sheep fed the crop off lightly until August. Free Gallipoli, Federation, and Nizam were the varieties grown, and they probably yielded in that order. The crop was remarkably free from flag smut and take-all, which diseases were fairly common at Benalla this year. As was to be expected in a field so frequently given up to wheat, there was some wild oats to be seen in the crop.

The Awards.

The particulars of the points awarded are tabulated below:—

30 Acres of Wheat.

Competitor.	Variety.	Apparent Yield.	Purity of Type.	Freedom from—		Evenness.	Total.
				Disease.	Weeds.		
Possible Points ..	.. .. ..	35	20	15	15	15	100
R. A. Sadler ..	Turvey ..	34	19	12	15	15	95
A. L. Guppy ..	Free Gallipoli, Nizam, and Federation	35	19	13	13	14	94
— Boyd ..	Major and Free Gallipoli	32	18	13	14	13	90
D. Heaney ..	Free Gallipoli, Bomen, and Nizam	30	18	13	15	13	89
— Lindsay ..	Free Gallipoli and Federation	30	18	14	13	14	89
— Rogers ..	Major ..	29	18	13	14	13	87
— Conway ..	Federation and Major	28	17	13	13	14	85
C. H. Herridge ..	Major and Minister	29	17	12	14	13	85
— Hill ..	Major ..	23	18	13	14	13	81
— Lindsay ..	Major ..	26	18	12	12	13	81
D. Smith ..	Austan and Joffre	23	18	12	14	12	79
C. H. Herridge ..	Major ..	21	17	11	14	12	75

Mr. Boyd, of Boxwood, and Mr. D. Heaney both showed clean, pure crops of wheat that should have yielded well.

It is interesting in competition work to see a number of wheat varieties side by side, provided that the several varieties are sown under identical conditions, so that the test is reliable. A number of new varieties, such as Free Gallipoli, Nizam, and Bomen, have been tried in the district, and have shown out favorably ahead of the district favorite, Major. It will be interesting to see how they will compare in a wet year.

The remaining competitors all had something of interest to show and discuss, but space will not permit of further detail.

Take-all.

Where take-all and flag smut had appeared in paddocks recently broken up from grass, it was noticed that the diseased patches were nearly always dirty with such grasses as barley and spear grass. As vegetation of this kind carries on these diseases, it is advisable to make a special effort to destroy the grasses and seeds of the diseases by burning the stubble and by thorough cultivation. In bad cases it may be necessary to grow oats instead of wheat, in order to check the take-all.

Quantities of Seed and Manure Used.

The average amount of seed sown by competitors was 75 lb. per acre, with 102 lb. superphosphate. In the majority of cases the fallows had been well worked in the spring, thus leaving a good mulch on the fallow during the summer. Some crops were sown before the rain in May, but the majority were sown in the third week of May after cultivation of the fallow.

The old-established home of a Rutherglen vigneron and farmer—Mr. C. Gill.

RUTHERGLEN CROP COMPETITION, 1927.

Eighteen farmers entered their crops in the second wheat crop competition held within the Rutherglen Shire. Such a large entry is a tribute to the keenness of the competitors and to the organizers of the Rutherglen Agricultural Society. Although many competitors knew beforehand that they had little chance of winning a prize, but few withdrew their entries; in this way they assisted to attain the object of the competition, which is to ascertain the methods that will give the heaviest yield.

The outstanding crops in the competition were those of Messrs. C. Taylor, Melville Brothers, and D. J. O'Donoghue. The crops of all three promised to yield more than 10 bags per acre. Mr. Taylor's winning crop of Federation, at Brimin, was very thick, well-headed, and free from undergrowth. This paddock of red loam was in good heart, as it had been out to grass for eight years.

During 1926 very little fallowing was done in the Rutherglen district before September, as the ground was waterlogged. Mr. Taylor fallowed 5 inches deep in September, and harrowed in October. The fallow was then left to the sheep till May, when it was disced and harrowed.

When no rain fell during the first week in May, many farmers sowed their wheat on the dry fallows, preferring to take the risk of a poor germination and heavy weed growth rather than wait for a late rain. In many years a late break in the weather is followed by waterlogging, and late sowing is then a failure.

The season favoured the dry sowing. Good rains fell late in May, and all crops germinated well. Particularly was this so where the seed was dry-pickled with copper powders.

June was very cold, and Cape weed and other weeds were not troublesome. Late-sown crops also did well, for no waterlogging took place.

Mr. Taylor sowed his crop before the May rains, harrowing after the drill. He used 65 lb. seed and 80 lb. superphosphate per acre. The sheep fed the crop off in July and early August, after which it was spike-

Mr. C. W. Taylor's Winning Crop of Federation—11 bags per acre.

rolled. Mr. Taylor did not pickle his seed, and was very fortunate to have only a few heads of ball smut in his crop.

Messrs. Melville Brothers, of Great Northern, showed an equally heavy crop of Free Gallipoli, sown on fallowed new land. After grubbing, the land was fallowed with a mould-board plough 5 inches deep in August. It was harrowed twice in September, disked in October, and harrowed in October, March, and May. Dry-pickled wheat was sown on a dry seed-bed in the first week of May with 75 lb. of both seed and manure per acre. The wheat was not quite as pure as that of the winning crop, nor as even and clean.

Harvest results at the Rutherglen State Farm have supported the district experience that Free Gallipoli and Federation were the heaviest yielders of the standard varieties in 1927.

Mr. O'Donoghue's crop of Waratah was very tall, and liable to shed or thresh out. Fortunately for many such crops, the harvest weather was ideal. His fallow had been ploughed in August, harrowed immediately and twice before harvest, and then scarified with the Wimmera

scarifier in January. Seventy pounds of seed and 1 cwt. superphosphate per acre were used. The seed was not pickled, probably due to Mr. O'Donoghue's enforced absence in Melbourne, and the result was that the wheat, although "sown dry," was badly infected with smut. Waratah is an early-maturing variety, and is more suitable for late sowing in this district.

Mr. Waite showed a heavy crop of Free Gallipoli, sown on well-worked fallow. Ploughed in July, the paddock was then harrowed. In October, disking was necessary to kill weed growth, and the spring-tooth, going 3 inches deep, then formed a good seed-bed. The 60 lb. of seed and 80 lb. of manure per acre were sown on a dry seed-bed. This crop was spoilt by the presence of foreign heads.

Messrs. Fleming and Gullifer showed crops that were heavy in parts, but too uneven to yield very heavily per acre.

The Awards.

25 Acres of Wheat of One Variety.

Competitor.	Variety.	Apparent Yield.	Purity of Type.	Freedom from—		Evenness.	Total.
				Disease.	Weeds.		
Possible Points ..	.. .. ..	35	20	15	15	15	100
C. W. Taylor ..	Federation ..	32	18	14	15	14	93
Melville Bros. ..	Free Gallipoli ..	32	17	14	14	13	90
D. J. O'Donoghue	Waratah ..	30	19	11	14	14	88
J. Waite ..	Free Gallipoli ..	27	16	14	15	14	86
Melville Bros. ..	Waratah ..	25	19	14	14	14	86
Melville Bros. ..	Joffre ..	27	17	14	14	14	86
J. F. Hiskens and F. H. Furze	Turvey ..	22	19	14	15	14	84
J. Rae ..	College King ..	22	18	14	14	14	82
J. H. Flemming ..	Federation ..	25	17	14	13	12	81
J. Rae	Federation ..	23	17	14	14	13	81
Geo. O'Donoghue	Waratah ..	22	18	11	14	13	78
P. Gullifer ..	Federation ..	20	18	14	13	13	78
W. Morley ..	College Purple	19	17	12	14	14	76
D. Campbell and R. Jack	Turvey ..	20	17	12	14	13	76
P. Gullifer ..	Free Gallipoli ..	21	18	13	12	12	76
A. Pollock ..	Turvey ..	18	18	12	14	13	75
Geo. O'Donoghue	Federation ..	19	16	14	14	12	75
J. H. Flemming ..	Free Gallipoli ..	20	17	13	12	12	74

Of the eighteen crops, twelve were sown on fallow, two on lea ground, and the remaining four were second crops grown on lea ground. The late-sown crops would probably have been thicker had a heavier allowance of seed been used.

Sowing Subterranean Clover with Crops.

In July Mr. Morley sowed subterranean clover with his wheat at the rate of 2 lb. per acre in order to cheaply establish this valuable fodder plant. Such a method of using cover crops may be successful if the wheat and clover are sown early in the season, particularly in a wet winter, and if the wheat is not sown too thickly, and not fed off. If the clover cannot be sown by itself, it is probably best sown with oats on stubble land, for such a crop will not need feeding off, and will naturally be thinner than a crop sown on fallow.

With Mr. Morley the germination had been poor, due to the cold conditions, and it was only in the furrows, where the oat crop was thin and the soil very moist, that the plants had matured.

Quantities of Seed and Manure Used.

The average amount of seed used by competitors was 66 lb. per acre, with 91 lb. of 22 per cent. superphosphate.

The crops were quite free from the diseases, take-all, foot-rot, and flag smut, but loose smut and ball smut were common.

The majority of the farmers fallowed late in September, a tardiness due to the wet winter, and they only harrowed before harvest. They then prepared for sowing with the disk cultivator, spike roller, and harrows.

In a normal season it should be profitable to give one deep cultivation to the fallow during the spring. If for any reason such working is

Mr. A. J. Sadler, Taminick, harvesting a 12-bag crop.

not possible, then the fallow should be cultivated as soon as possible after harvest.

It is hoped that the competitors of 1927 will maintain an interest in the Crop and Fallow Competition, so that the methods used in less favorable years may be compared.

WANGARATTA CROP AND FALLOW COMPETITION.

The North-Eastern wheat areas have probably produced record yields this season, and the Wangaratta growers have shared largely in this success.

Competitors in the Crop and Fallow Competition are to be congratulated on their exhibits, which should have produced an average yield of approximately 10 bags per acre. Harvest reports indicate that many farmers have obtained higher yields than expected, as the wheat appears to have been very heavy. Mr. A. J. Sadler's winning crop of Baroota Wonder yielded 14 bags per acre.

Rain records at several centres show considerable variation in the district. The rainfall at Glenrowan for the year was at least 2 inches

higher than that at Boorhaman, whilst the all-important October rains amounted to only 230 points at Docker's Plains, when falls of 3½ inches were recorded within a radius of 25 miles.

The crops grown on the lighter loams recovered after the dry September more quickly than those on the heavy clay soils, and, generally speaking, it was on these lighter soils that the heaviest crops were found.

The Wangaratta competition was particularly interesting and instructive, as the fallows on which the crops were grown had already been inspected.

There is no doubt in the minds of the competitors that to fallow is the only sure method of obtaining maximum yields. In the report on the fallow section of the competition, attention was drawn to the fact that many farmers who had well-prepared fallow could sow their wheat into a dry seed-bed if the May rains were long delayed. In the case of

Wheat Variety Tests carried out by Mr. Hallissy.
Major (left) Mogul (right).

early May rains, a thorough cultivation could be given the land before sowing.

On the other hand, neglected fallows would have to be deeply disked while in a dry condition, and then rolled in order to prepare the soil for the seed.

The autumn rains did not come until late, and many farmers sowed into a dry seed-bed. Others waited until after the first light rain on the 11th May, and also sowed when the germination conditions were not ideal.

In some of the crops inspected, it was obvious that the seed had germinated unevenly, due probably to deep sowing in an uneven tilth, heavy pickling with bluestone, or to late sowing at the end of June, when the soil was very cold.

The value of pickling with dry copper powders was again emphasized, and it was shown conclusively that it is not safe to sow without pickling the wheat, even when sowing in dry soil. One farmer who did so lost heavily from ball smut.

There were twelve entrants in the competition. Although such an entry is satisfactory, it is regretted that more farmers will not take an active interest in the competition, for it is only by the co-operation of many that sufficient data can be obtained to enable the judge to draw definite conclusions as to the reasons for variations in the crops of the district.

Both 1925 and 1927 have been dry seasons, and we may reasonably expect a normal season in 1928. It is hoped that all present and past competitors will maintain their activities in the coming year.

The Awards.

The detailed awards are shown in the tables given below:—

Crop Section, 1927.

40 Acres of Wheat Grown on Fallow Exhibited in February, 1927.

Competitor.	Variety.	Apparent Yield.	Purity of Type.	Freedom from—		Evenness.	Total.
				Disease.	Weeds.		
Possible Points ..	.. .. ..	35	20	15	15	15	100
A. J. Sadler, No. 1	Baroota Wonder	35	19	14	15	14	97
R. A. Sadler, No. 2	Turvey ..	34	19	15	12	15	95
A. J. Sadler, No. 2	Waratah ..	34	19	14	14	14	95
A. Benny ..	Waratah and Marshall's No. 3	32	18	14	13	14	91
R. A. Sadler, No. 1	Free Gallipoli ..	33	16	14	14	14	91
Misses M. and A. Coffey, No. 1	Free Gallipoli ..	30	19	12	13	13	87
T. Byrne, No. 1 ..	Minister ..	26	18	12	13	13	82
Docker and Richardson	Federation and Currawa	24	18	13	13	13	81
— O'Keefe, jun. ..	Minister and Marshall's No. 3	24	16	12	13	13	78
R. M. Sammon ..	Waratah, Major, and Federation	23	16	13	13	13	78
Misses M. and A. Coffey, No. 2	Major ..	24	16	12	12	13	77
T. Byrne, No. 2 ..	Federation ..	21	16	11	11	13	72

Total Points for Fallow and Crop Thereon.

Competitor.	Fallow.	Crop.	Grand Total.	——
A. J. Sadler, No. 1	95	97	192	First
R. A. Sadler, No. 2	94	95	189	Equal second
A. J. Sadler, No. 2	94	95	189	Equal second
R. A. Sadler, No. 1	93	91	184	Third
Docker and Richardson	93	81	174	
A. Benny	82	91	173	
Misses M. and A. Coffey, No. 1 ..	82	87	169	
T. Byrne, No. 1	84	82	166	
R. M. Sammon	86	78	164	
— O'Keefe, jun.	85	78	163	
Misses M. and A. Coffey, No. 2 ..	83	77	160	
T. Byrne, No. 2	82	72	154	

The season suited the light brown loams at Taminick, and the crops of Messrs. A. J. and R. A. Sadler were all very heavy and remarkably even.

Mr. A. J. Sadler showed the winning crop on the fallow which was placed first in the fallow section. He thus won the combined crop and fallow competition. The variety was Baroota Wonder, a tall-growing wheat from New South Wales. The heads were well developed, true to type, and quite free from disease. Due to its great density and height, this crop had commenced to lodge, and it did not appear to be sufficiently strong in the straw to warrant large areas of this variety being sown.

The details of cultivation given to the various fallows on which the competing crops were grown have been already presented in the report on the fallow section of the competition, judged in March last.

Mr. Sadler did not cultivate his fallow after that date until the time of sowing, the first week in May, when 65 lb. of dry-pickled seed and

Mr. R. A. Sadler's home at Taminick.
The concrete bricks were made on the property.

85 lb. of superphosphate were sown per acre. The rains in the following week provided a perfect germination, and a very thick crop resulted. This crop, like all the competing crops at Taminick, had been lightly fed off with sheep. No disease whatever was detected in Mr. Sadler's crop. The same competitor obtained third place with a crop of Waratah, grown in the same paddock as the Baroota Wonder. It did not seem to be quite so thick, and a few grassy areas appeared to have encouraged some small patches of take-all.

Mr. R. A. Sadler obtained second place with Turvey, the 40 acres shown including the smaller area of 30 acres that won the first prize in the Benalla competition. This crop was also true to type, but contained a larger percentage of small heads than the other varieties. Free Gallipoli was the second choice of this competitor, but, unfortunately, some Turvey wheat had been mixed with the seed. The heads of wheat were well developed, but the presence of pinched grain was expected to reduce the yield.

Free Gallipoli, not being a tall-strawed variety, should be worth trying out in this district, where it is said that Federation fails.

The methods of cultivation used at Taminick may be summarized as follows:—Plough 5 to 6 inches deep in July, and harrow immediately. The rigid-type scarifier or the spring-tooth-cultivator are then used regularly to cut out any weeds that grow up in the spring, and to gradually bring about the formation of a firm, level seed-bed underlying a loose, fine mulch from 2 to 3 inches deep. The harrows are used after light rains to maintain the loose surface. It is emphasized that these methods cannot be applied to the red clay loams at Millewa or Docker's Plains, as they would result in too fine a mulch.

Mr. A. Benny, of Boorhaman, exhibited a fine crop of Waratah and Marshall's No. 3. Both varieties showed a few strangers, and traces of both ball and loose smut were present.

In March the fallow on which this crop grew was not very attractive. Thereafter, however, it was given every chance. The fallow was thoroughly cultivated with the Coleman type scarifier, and then drilled with 72 lb. seed and 80 lb. superphosphate per acre. A good germination was obtained, and the crop, although very forward, was not fed off. The soil was in good heart, as it had been spelled in grass for a few years.

Misses M. and A. Coffey, of Tarrawingee, showed Free Gallipoli and Major wheat, the former being the heavier crop. The Free Gallipoli was sown in dry soil on the 27th April, and the Major on the 12th May. The latter crop was affected with take-all in the grassy patches, and appeared to have burnt off wherever it was at all rank. In both cases 75 lb. of dry-pickled seed and 80 lb. of manure per acre were used. Mr. Hallissy, who manages the property, is trying many new types of wheat, and his experiments will be watched with interest in the Wangaratta district.

Mr. T. Byrne had a good crop of Minister, but it was rather uneven. It was much heavier than his second entry of Federation, sown in the same paddock. The difference is probably partly due to the extra cultivation the No. 1 fallow received. It was disked before harvest and spring-toothed in February, whilst the No. 2 fallow was left after ploughing and harrowing until February.

The remaining crops were all of a high standard, but were defective in minor points, in addition to being thinner than the leading exhibits. It appeared that crops which were fed off heavily in the early spring did not recover sufficiently to give high yields.

The average rate of seeding was 77 lb. per acre, and of manure 89 lb. per acre.

Generally speaking, the crops were free from serious disease, and promised heavy yields. Eight different varieties of wheat were shown, but no conclusion as to the best variety could be drawn from the limited number of crops.

BEAUCHAMP CROP AND FALLOW COMPETITIONS, 1927.

Report of the Judge, Mr. J. B. Mann, Quambatook.

Beauchamp, in common with most of the Mallee districts, experienced an exceptionally dry season, the total rainfall up to the 31st of October amounting to only 519 points. Of this 383 points fell between 1st June and 1st November (the growing period of the crop). In addition, the rainfall during the fallow period was scanty, resulting in a comparatively low moisture content in the fallows on which the crops were grown.

Notwithstanding these adverse conditions, some good results were obtained. It was noticeable that the crops in the heavy black or crab-holey country were not as good as those on red land or sandy loam, those on the former growing rank during the winter months and burning off in the summer. The competitors had kept the varieties of wheat very pure and free from disease, but, in one case, the presence of ball smut was noticed.

Results.

Best 100 acres of crop on fallow.

Competitor.	Yield.	Trueness to Type.	Absence of—		Evenness.	Total Crop.	Total Fallow.	Total Crop and Fallow.
			Weeds.	Disease.				
Possible points ..	**35**	**20**	**15**	**15**	**15**	**100**	**100**	**200**
J. O. Free ..	27	19	14	15	14½	89½	91	180½
C. P. Teague ..	20½	19½	14	15	14½	83½	93½	177
H. W. Miles ..	20	19½	14½	15	14	83	93	176
R. A. Langton ..	21	20	14½	15	14	84½	90	174½
F. W. Steer ..	21	19	13	15	14	82	91	173
J. Fry ..	22	18	13	15	14½	82½	89	171½
R. Teague ..	19½	19½	14½	15	14	82½	87	169½
E. E. Miles ..	22	18	14	15	14	83	85	168

Mr. J. O. Free, Lalbert (89½ points) scored the highest points in this section with a very fine crop of Ranee with even growth and well-filled heads, considering the dryness of the season. The crop was fairly true to type, but contained a few strangers. Wild oats and charlock were present to a small extent, none being present on the best land in the block. The land was harrowed in January and again in May, and sown with a combine the first week in June. Seed 75 lb. and superphosphate 90 lb. per acre, were sown. The crop was harrowed after drilling.

Mr. R. A. Langton, of Beauchamp, was second with 84½ points. His crop consisted of Ranee, and was grown partly on dark crab-holey land,

upon which the effect of the dry season was very noticeable, causing the crop to be a little uneven. It was, however, exceptionally pure and true to type, and quite free from disease. The land was harrowed in the middle of June; sown from 1st to 12th July; and harrowed immediately after the drill; 70 lb. of seed and 90 lb. of super. per acre were used.

The third crop, that of Mr. C. P. Teague, was Dollar, grown on dark land. This crop was true to type, showing a few strangers and a little barley. There was a complete absence of disease. This would have been a heavy crop had it received another good spring rain. The fallow was harrowed the last week in May; sown with a combine the third week in June with 68 lb. of seed and 70 lb. of super. per acre.

Whole of Competitor's Crop.

Results.

Competitor.	Yield.	Trueness to Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.
Possible points	**35**	**20**	**15**	**15**	**15**	**100**
A. Mercer	28	19½	15	15	14½	92
A. Cuming	24	19	14	15	14	86
W. Ryan..	23½	19	14	15	14½	86
F. Hayes..	23	18½	13½	15	14½	84½
C. P. Teague	21	19	14	15	13½	82½
W. G. Hogan	23	18½	13½	14	13½	82½
J. Teague	19½	19½	14	15	14	82
H. W. Miles	20	19½	14	15	13½	82
E. E. Miles	21	18½	13½	14½	13½	81

The best crop in this section was that of Mr. A. Mercer; it consisted of 320 acres of Rance—all in one piece. The crop, which was very clean and even, was free from disease and weeds. This exhibit was a very fine crop, true to type, and, although slightly pinched, would provide good seed.

Seeding, at the rate of 70 lb. seed and 90 lb. superphosphate per acre, was commenced on 3rd June and finished on 28th June. The last 100 acres sown were harrowed immediately after drilling. The seed was pickled with bluestone.

This exhibit showed great care in the preparation of the land and the manner of drilling. For so large an area the crop was exceptional in its evenness and purity.

Mr. A. Cuming entered a crop of 150 acres, consisting of Federation, Rance, and Penny. This crop was grown for the most part on red sandy loam and looked well, particularly the Penny. At one side there were about 20 acres of uneven land, and on this the crop was rather patchy. The varieties were true to type, but showed some barley and wild oats. The fallow was spring-toothed in May. Seed 70 lb. and super. 90 lb. per acre, were sown with a combine. The seed was dry pickled.

The third crop in the section was that of Mr. W. Ryan, of Beauchamp. This exhibit consisted of about 80 acres of each—Federation, Bald Early, Gluyas, Ranee, and Wannon. All were sown on summer fallow in March and April. This was a very commendable exhibit, and, with the exception of a few patches of limey land, was fairly even in character. A few oats were noticeable, but the whole was free from disease. The land was spring-toothed in April and May; and sown with a combine in July with 86 lb. of seed and 96 lb. of super. per acre. The seed was dry pickled.

Fallow Competition—50 to 100 Acres.

Results.

Competitor.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Total.
Possible Points	**25**	**25**	**25**	**25**	**100**
C. P. Teague	24	24	25	23½	96½
W. G. Hogan	24	24	24	24	96
R. Teague	24	24	24	23½	95½
A. Mercer	24	24	24½	23	95½
H. W. Miles	23½	23½	25	23	95
J. O. Free	23	23½	25	23	94½
G. F. Steer	23	23½	25	23	94½
R. A. Langton	23½	23	24½	23	94
E. E. Miles	22½	23	25	22½	93
J. Fry	23	22	24	23	92
F. Hayes	23	22	25	22	92
F. W. Steer	23	22½	24	22	91½
A. Cuming	22	23	24	22	91
J. Teague	22	22	24	22½	90½
W. Ryan	22	22	23½	21½	89

The winning fallow was shown by Mr. C. P. Teague, and consisted of 100 acres of fallow in the western half of the paddock. This fallow was ploughed in June and early July; harrowed in August; and combined in September. The land had been in grass for two years. This was a very nice fallow, but was left rather open on top and a little cloddy below.

The second fallow was entered by Mr. W. G. Hogan. This was summer fallowed in April with a sundercut. The whole was skim-ploughed in July; and worked again with a heavy cultivator at the end of the same month. It was harrowed early in August, and again heavy cultivated at the end of August. A crop of self-sown oats was grown on this land, and cut for hay the previous year. This was a very good fallow, showing a good moisture content.

Third place was shared by Messrs. A. Mercer and R. Teague. Mr. Mercer's exhibit consisted of 100 acres, ploughed, 11th July to middle of August, with a bould-board plough. It was harrowed in September, and again in October. This was a very nice piece of fallow, showing good moisture and a fair mulch.

GREATER WHEAT PRODUCTION.

SOWING THE 1928 CROP.

By H. A. Mullett, B.Agr.Sc., Superintendent of Agriculture.

Despite the fact that current prices are lower than they have been for some years, Victorian wheat-growers are likely to sow a largely-increased acreage this year. As in 1915, there are many who, in addition to their normal acreage, will re-sow the fallow land upon which the crop failed last year, and there are many others who are likely to respond to the Premier's appeal for an increased acreage in the interest of the State. These are precisely the factors which were responsible for the record area of 3,679,000 acres in 1915. The land which failed in the 1914 drought was re-sown, and a national appeal for greater production of foodstuffs was launched. This year, perhaps, that acreage may not be reached, but the fact remains that what was possible thirteen years ago should be even more readily achieved with the more modern equipment of to-day.

The mere sowing of increased areas, however, will not of itself automatically produce more wheat and put money into the pockets of the farmers. The weather is notoriously fickle, and sound farmers have long given up gambling on the advent of favorable seasons. Not an acre should be sown that cannot be put in well and depended upon to give a satisfactory account of itself, given an average season. It is true that bumper seasons, in which scratched-in crops may succeed, often follow dry years, but such a favorable sequence is by no means an inflexible rule.

It is pre-eminently an occasion for putting into practice the best and most scientific wheat-growing methods. Except in the new Mallee, where the percentage of fallow is necessarily low, not an acre should be sown which is not fallow, or fallow upon which the crop failed last year. Strenuous efforts should be made to secure only the best seed of high-yielding strains of varieties suited to the district. It should be pickled against smut in the standard manner with formalin or dry-powdered copper bunticides. Liberal dressings of seed and manure.

Each operation in growing the crop has been the subject of extensive research, and this, coupled with the experience of the leading growers, makes it possible to lay down in considerable detail the methods by which the greatest measure of success is likely to be achieved.

Well-tilled bare fallow has long been proved to be perhaps the greatest factor in the success of the wheat crop. This is not only because of the extra moisture which may be conserved in the fallow, but because the release of fresh supplies of available plant food is promoted by the tillage and the long exposure to the weather. Last year little moisture was stored in the fallows, and none in the land upon which the crop failed, because there was little or none to store; and until recently it looked as if that would be the condition until seeding time. But the advent of unexpected and copious summer rains over the greater part of the wheat belt has altered all that. It was an auspicious beginning to the year, and it has provided a golden opportunity for the conservation of moisture in the fallows, and for working and mulching the parched land upon which the crop failed last year.

The rain has promoted a germination of weeds on all tilled land, which will permit of their being killed and thus eliminated. In many districts stubbles may be worked up preparatory to sowing oats, thus freeing teams and labour for concentration on the more important job of cultivation and seeding the wheat crop later on. Keen farmers will also take the opportunity of laying down summer fallow for next year's crop.

Should further summer rains occur, no opportunity should be neglected of shallowly working over the land intended for seeding. Where weed growth is not prolific the harrows are generally the most practical implement to use at this time of the year. In many instances, however, implements, such as the various makes of tined cultivators, will have to be employed, especially in a month or so. It is most important to realize that on most soils it is unnecessary and inadvisable to deeply stir in the summer land intended for wheat-growing this season Generally a depth of a couple of inches is all that is necessary, the only exception being on the stiffer clay soils.

All cultivation given should be to a regular depth, and every effort should be made to obtain as uniform a textured tilth as possible. The seed-bed, under the mulch, should be firm and well consolidated. To obtain this in the loamy-textured soils of the Mallee and Wimmera is a matter requiring some skill.

If these precautions in obtaining good tilth and a satisfactory seed-bed are observed, the strike and growth of the young seedlings is likely to be uniform and regular over the whole field. Wheat sown on a loose seed-bed appears to be much more susceptible to take-all than ordinarily.

Once the seed-bed has been prepared, the next step is to obtain a good strike of a high yielding strain of seed. No breeder of stud stock expects to get a high-class progeny from a mongrel animal, and no sound wheat-grower expects the best results from common run-out seed. He takes steps to procure strains of seed of proved high-yielding capacity, such as are produced at the State Farms and Colleges, and also by a number of leading wheat-growers. Some settlers in the newly-settled Mallee areas, that suffered total loss of crop last year, however, are, unfortunately, not in a position to exercise a personal choice in the matter, as there is no seed-wheat in their districts. But the position, to a large extent, has been met by the purchase by the Closer Settlement Board of seed from crops approved by officers of the Agricultural Department. This wheat was inspected for trueness to type on the farm before harvest, and was not accepted unless it conformed to a satisfactory standard of freedom from weeds and foreign matter. In rejecting some of the wheat tendered it, the Department has acted wholly in the interests of the settlers on whose behalf the wheat was purchased.

In addition to the use of high-yielding strains of wheat, the varieties should be suitable to the district. The results of Departmental tests have shown that great dependence could be placed on the following varieties for the districts named:—

Wimmera.—Federation, Free Gallipoli, Nizam, Wannon.

Goulburn Valley.—Major, Free Gallipoli, Federation.

Older Mallee.—Federation, Free Gallipoli, Ranee, and, for late sowing, Rajah.

New Mallee (on land free from shoots), Sepoy, Yandilla King, Ranee, Currawa, Rajah.

On new land where shoots are present, tall varieties are required for early sowing, Yandilla King; for mid-season sowing, Ranee, Currawa; and for sowing last, Mac's White and Rajah.

All seed should be pickled against ball smut, even if sown dry. The risk of a smutted crop is great unless the pickling is carefully done. The Departmental tests have proved that formalin and the dry copper-powdered bunticides are much preferable to bluestone. The latter kills up to 20 per cent. of the wheat, and delays germination to from five to seven days, a serious matter for late sowing, and on any land likely to run together and set. Formalin is very satisfactory, except when it is intended to sow the wheat dry; it retards germination much less than bluestone. The correct strength for formalin is 1 lb. of formalin to each 45 gallons of water used. The time of immersion should be three minutes. The wheat is best immersed and all floating smut balls skimmed off; thus re-infection of the grain is avoided.

The dry method of pickling does not interfere with germination at all, and should be used in all cases of dry sowing, and especially under conditions where a rapid germination is required. It is a very successful bunticide where the wheat is not obviously smutty, but in cases where settlers cannot avoid sowing seed easily recognizable as smutted, as may be the case this year, formalin should be used in preference to the dry method, and on no account should the immersion and the skimming off of the smut balls be neglected. With the dry copper powders from 1½ to 2 ounces per bushel should be mechanically dusted over the wheat. The operation needs care, and imperfect mixing is bound to result in smut infection.

To obtain a clean crop it is best to defer seeding operations until after a good sprout of rubbish has been obtained in the autumn and killed by cultivation. But in the Mallee and the Goulburn Valley usually seeding cannot be delayed beyond a time that will permit of the whole area being sown by mid-June. On the black soils of the Wimmera it is unusual to commence before this latter time, but the soil there permits of satisfactory germination being obtained during July and early August. As a rule a depth of 1¼ to 1½ inches is sufficient to sow the grain, which should be immediately covered by harrowing.

No crop is likely to give the most profitable yields without a liberal dressing of superphosphate, which promotes a vigorous root development and a more rapid rate of growth, especially in the first few weeks, also earlier maturity, and, finally, heavier yields.

The following dressings of superphosphate have been proved in Departmental tests to be the most profitable for the districts named for fallowed land:—Wimmera, 1½ cwt.; Goulburn Valley, 1 cwt.; older Mallee, 1 cwt.; newer Mallee, 90 lb. On non-fallow lesser dressings are advisable. Superphosphate has a considerable residual effect. The residues from one application remain active in the soil for several years. Those who re-sow land, upon which last year's crop failed, can reduce their usual dressing of manure by one-third.

Well-worked fallow, well stocked with plant food and moisture, and liberally manured, will support more plants per acre than poorly-farmed land. The maximum rate of seeding should be used on a well-worked fallow. In the Wimmera and Goulburn Valley 75 to 80 lb. an acre is desirable; in the older Mallee from 65 to 70 lb.; in the newer Mallee, for fallow, 60 lb., and 45 to 50 lb. for non-fallow. Heavy seeding helps to suppress weeds in weedy land.

To sum up—

1. Work up land intended for sowing after every summer rain.
2. Sow appropriate varieties of pedigree strain.
3. Pickle the seed carefully.
4. Liberally seed and fertilize the crop.

WHEAT EXPERIMENTS.

RESULTS OF OFFICIAL TESTS IN THE MALLEE.

In a report to the Director of Agriculture, Dr. S. S. Cameron, the Superintendent of Agriculture, Mr. H. A. Mullett, states that, despite the adverse season in the Mallee, the plots at Walpeup have given up to 19½ bushels an acre—a remarkable yield on a total rainfall of 692 points for the year. Only 536 points fell in the growing period, and the successful result must, in large measure, be attributed to the skill bestowed in the cultivation of the fallowed land by Mr. Gniel.

The varieties which gave the best yields were—Free Gallipoli, 19.6 bushels; Sepoy, 19.1; new crossbred Indian F x Federation, 19.0; and Rajah Selection 228—18.4 bushels.

In the oat section, Palestine (27.9 bushels per acre) and Sunrise (25.4 bushels per acre) gave much heavier yields than Algerian (18.3 bushels), Lachlan (17.3 bushels) and Burt's Early (15.6 bushels). The oats were grown on well-worked fallow—seed, 61 lb. per acre; manure, 92 lb., 22 per cent. super. per acre—sown 3rd June.

Variety Wheat Plots, Walpeup.

Results, 1927.

Sown 2nd June on well-worked fallow. Super. (22 per cent.) 92 lb. and seed 63 lb. per acre. Pickled with copper carbonate, 2 oz. per bushel.

	Bushels per acre.
Free Gallipoli	19·6
Sepoy	19·1
New crossbred (Indian F x Federation)	19·0
Rajah Selection 228	18·4
New crossbred (Currawa x Major x Gallipoli)	18·4
Nizam	18·0
Ghurka	17·7
Sepoy	17·4
New crossbred (Ranee x Rajah)	17·4
Yandilla King	17·1
Rajah	17·0
Currawa	17·0
Federation (Check)	16·9
Mogul	16·8
Confederation	16·8
Ranee	16·4
Federation (Check)	15·9
Federation (Check)	15·5

Although the plots have been conducted for three years, the results have not been given, owing to soil variations on the site sown in 1926.

On the manurial section, sown on fallow to Federation wheat, the results show the advantage of liberal applications of fertilizer, and again clearly demonstrate that on well-worked fallow in dry years no burning off effect is directly attributable to the manure. On the contrary, the yield is increased.

WHEAT FERTILIZER TESTS.

Sown on well-worked early fallow. Federation wheat, 61 lb. per acre, pickled with copper carbonate, 2 oz. per bushel.

Results.

Manure Applied.	Yield, 1927.	Average Yield, 1925–1927 inclusive.
	bus. per acre	bus. per acre
No manure	9·0	15·7
Super. 30 lb. per acre	12·1	18·9
Super. 60 lb. per acre	14·4	20·7
Super. 90 lb. per acre	15·7	22·0
Super. 120 lb. per acre ..	16·6	22·5

The results of the test confirm those of previous years, in that they indicate that 90 lb. is the most profitable amount for use on well-worked fallow in the northern Mallee districts.

The dressing commonly used is 60 lb. an acre. The tests show that where this is raised by 30 lb. an acre, costing about 1s. 6d. an acre more, an extra 1.3 bushels an acre is obtained, worth, approximately, 6s. 6d.—leaving an extra profit due to the use of the manure of 5s. an acre.

RESULTS OF TESTS AT NUMURKAH.

The object of the Numurkah experiments was to determine the most profitable manurial dressing to apply under the conditions of the district, as well as the best wheat variety to sow. The experiments have been conducted for two years.

FERTILIZER TESTS, 1926 AND 1927.

Ten plots, each one-third acre, sown on well-worked fallow, 18th to 20th May, with Federation wheat at the rate of 73 lb. per acre. The wheat was pickled with copper carbonate, 2 oz. per bushel.

Treatment (per acre).	Yield, 1927.	Average Yield, 1926–1927.
	bush. per acre.	bush. per acre.
No manure	5·3	13·0
Super., ½ cwt.	9·3	15·6
Super, 1 cwt.	12·9	17·8
Super., 1½ cwt.	14·8	18·4
Super., 2 cwt.	15·7	19·4
Super., 2½ cwt.	16·2	19·5
Super., 1 cwt., and gypsum, 10 cwt. ..	13·2	17·8
Super., 1 cwt., and gypsum, 20 cwt. ..	13·7	19·5
Super., 1 cwt., and gypsum, 30 cwt. ..	14·5	20·0
Super., 1 cwt., and lime, 20 cwt.	13·6	19·5

Wheat Variety Tests, 1926 and 1927.

Variety.	Yield, 1927.	Average Yield, 1926-1927.
	bush. per acre.	bush. per acre.
Free Gallipoli	16·7	20·8
New Crossbred—		
Ind. F x Federation	15·1	20·3
Rance x Rajah	14·6	20·5
Penny x Currawa	14·4	20·7
Federation	14·4	19·0
Sepoy	14·3	19·3
Union	14·1	..
Nizam	13·8	20·9
Major	13·6	17·0

The soil upon which the plots are situated is a red clay loam, with a tendency to run together. The crop having been raised on a total rainfall for the year of 9.87 inches, the comparisons between the behaviour of wheat sown with various fertilizers and the yields of the varieties are of unusual interest.

The increased yields obtained with each successive amount of superphosphate applied up to the maximum of 2½ cwt. per acre show that, contrary to what is sometimes supposed, no "burning off" of the crop took place with the heavier dressings.

The use of gypsum as a corrective of soil texture, although its effect can be measured, is insignificant here compared with the marked results obtained on red soils in the Wimmera, and suggests that in the Goulburn Valley on soils similar to those at Waaia, applications of gypsum are not likely to prove profitable on a commercial scale.

In the Variety Trials, Free Gallipoli and two of the new crossbreds were superior to Federation and Major last year. Nizam, which did so well the previous year, has not maintained its position. Further work is necessary before a definite pronouncement can be made as to which of the newer varieties can be recommended for the district, but several of them appear to be superior to the standards Federation and Major.

MANURES FOR OATS.

Western District Tests.

By H. A. Mullett, B.Ag.Sc., Supt. of Agriculture.

The value of superphosphate, in comparatively heavy dressings, for oat-growing in the Western District has been demonstrated repeatedly by the experimental plots conducted by the Department of Agriculture there. The results of those tests have been further confirmed by a new series of experiments commenced at Winchelsea last year.

These experiments, which are carried out by the Department on the farm of Mr. T. Caldow, comprise manurial and variety tests with oats. The first year's results show that the best acreage yield was obtained from a dressing of 3 cwt. of superphosphate per acre. This plot yielded

at the rate of 69.6 bushels per acre, compared with a yield of 38.3 bushels per acre on the unmanured plot. The results of the manurial tests are as follow:—

Manurial Treatment.	Yield per acre.
Per acre.	bushels.
Super., 3 cwt.	69·68
Lime, 20 cwt., and Super., 2 cwt...	68·28
Super., 2 cwt.	66·4
Super., 2 cwt., and Sulphate of Ammonia, 44 lb. ..	63·8
Gypsum, 20 cwt., and Super., 2 cwt.	61·88
Super., 1 cwt.	56·0
No manure	38·3
Gypsum, 20 cwt.	32·68
Lime, 20 cwt.	31·88

Although these tests have been in operation for one year only, the figures obtained can be regarded as fairly reliable, since they are so closely in line with results obtained from other plots located on somewhat similar country in the Western District. The soil on which the Winchelsea plots are situated is a greyish-black basaltic loam, typical of the basaltic plains of the Western District, and the results obtained are of particular interest in that they indicate how, by the more generous use of artificial fertilizer, substantially increased yields of oats may be obtained in this important oat-growing district.

The average dressing of superphosphate used there with oats is about 1 cwt. per acre, but these and other tests have demonstrated that a dressing of at least 2 cwt. per acre would be very much more profitable. If the value of oats is taken at 3s. per bushel and the cost of the superphosphate applied at 6s. per cwt., it will be found that in the above tests the use of 1 cwt. of super. per acre has resulted in a net increase in profit of £2 7s. 1d. per acre. With the dressing of 2 cwt. of super. per acre the net increased profit works out at £3 12s. 4d. per acre, and with 3 cwt. of super. at £3 16s. 1d. per acre. The use of sulphate of ammonia in combination with superphosphate gave no increase in yield, nor have applications of lime or gypsum been followed by any profitable results.

The results of the variety trials were as follow:—

Variety.	Yield per acre.
	bushels.
Algerian	58·8
Mortgage Lifter	58·8
Lachlan	58·2
Palestine	55·88

No striking differences are apparent in the yield of these four varieties, and until the experiments have been in operation for a further period it will not be possible to indicate which of the varieties, if any, will be best suited to the conditions obtaining in this and similar districts.

HERD TEST RECORDS.

THEIR USE AND MISUSE.

By A. J. Gill, Senior Herd Tester.

There are many different methods of testing milk, and most of them can be relied upon to give accurate results if carefully carried out.

In the United States of America and Australia the system introduced by Dr. Babcock some years ago, and bearing his name, is in general use. In England, Ireland, and Scotland, the Gerber method—an undoubtedly excellent test—is the one favoured.

For testing, the utmost care must be taken when collecting samples. The milk should be weighed and mixed thoroughly before the amount required for the test is taken. Pouring from one bucket to another at least three times immediately the milk has been drawn allows a correct sample to be collected. Again, the sample must be heated to about 100 deg. Fahr., and thoroughly mixed by shaking before being placed in the pipette. When working the Babcock tester a pipette to hold 17.6 c.c. is used. The correct quantity of milk is 18 grams by weight. The required volume was arrived at by taking the average specific gravity of milk (1.032) and dividing that into the required number of grams (18). This gives us 17.44 c.c., and by using a 17.6 pipette we are enabled to empty this quantity into the testing flask, allowance having been made for the milk adhering to the pipette.

The utmost care should be taken when reading the butter-fat column. This is curved top and bottom, and is commonly called the meniscus. It should be measured from the highest to the lowest point. I have known two people in making the reading to differ from .1 to .2 per cent.

In testing cream, a coloured mineral oil is used, in order to get a flat reading, but this oil should not be used when testing milk, for it would bring about a lowering of the test. The milk-flask has been carefully graduated to allow for the meniscus. When charred particles are present in the butter-fat column do not attempt to make allowance; test the milk again, and likewise when the butter-fat column is cloudy and will not clear.

Some years ago the Department of Agriculture conducted Farmers' Classes in several important centres throughout the State, one of the most interesting features being the demonstrations in working the Babcock tester. Large numbers of farmers were taught how to test milk, and, consequently, several purchased outfits and commenced testing their cows. Unfortunately, however, some failed to realize that it was necessary to weigh the milk and calculate the amount of butter-fat yielded; neither did they grasp the fact that more than one test was required. They simply tested each cow's milk, and if on the first testing any cow's milk was not up to a certain standard the cow was sold. No allowance was made for the variation of test during the lactation period, which makes the result based on only one or two tests unreliable. Almost always a cow's test rises as the lactation period progresses, or as the flow of milk diminishes. There may be a difference of 2 per cent. between the first test taken two or three weeks after calving and one taken towards the end of a nine-months' milking period. There are, however, certain exceptions, and two of the leading cows in the State usually tested higher at the commencement of their lactation period than at the end.

While the method of culling cows on test alone, irrespective of the weight of milk, may have eliminated some low-testing animals, it is quite possible that some of the best were sent to the butcher. The value of a cow cannot be judged by test alone. The quantity of milk and the length of the milking period must be taken into consideration.

In the Government Standard Herd Test of 1926, a cow testing 2.9 per cent., gave 726 lb. of butter-fat in nine months. Occasionally abnormal tests occur. A cow with an average test of from 4 to 5 per cent. may suddenly rise to 7 or 8 per cent., and higher. I have known a cow after a road journey to test 10 per cent., with a somewhat reduced quantity of milk. Then we have instances when the test will drop to half the usual average. In the Government Standard Herd Test, an abnormal percentage is always rejected. Sometimes we may get a very high test when a cow is drying off; one giving 5 lb. of milk may test up to 8 per cent. The percentage appears high, but the actual yield would only be 2.8 lb. of butter-fat per week.

This is one point to which attention should be drawn. A man may offer a cow for sale stating that her milk has tested up to 7 or 8 per cent., while the average may be only 4 per cent. An inexperienced farmer may be deceived in this way and make the mistake of buying on the owner's assurance of one high test. A buyer should always insist on seeing the full record of any animal he proposes to purchase, and should carefully scan it to make sure that it is for a full milking period of nine months. Sometimes we find breeders who, while refusing to enter their herds in the Government Herd Test, and condemning the practice, are always endeavouring to use the Herd Test records of some distant relative in order to sell their stock.

Some little time ago my attention was drawn to the advertisement of a breeder noted for his bitter opposition to testing, which he declared was spoiling type. Yet in his advertisement he quoted the test records of the cows he was offering for sale. It is a peculiar fact, that one of the very few farmers who have been unsuccessful with pure-bred stock was he who purchased these very cows. That "testing destroys type" was quite true as far as animals of this type were concerned.

A few years ago, I visited a certain settlement. Two of the settlers had purchased pure-bred heifers. If my memory is correct, one had paid 70 guineas for a heifer, and the other 50 guineas. Both animals had been purchased from the same breeder. The settlers informed me that this man had had his herd entered in the Government Standard Herd Test, and, to prove it, produced a leaflet with the records of one of our champion herds printed on it. These men were very surprised when informed that this herd did not belong to the breeder from whom they had purchased the heifers, and that he had never entered a cow in the Government test. A search through the pedigrees revealed the fact that he had at one time purchased a bull from a tested herd. The records on the front page were sufficient to deceive inexperienced men; good prices had been realized where, without the test records, a sale would not have been effected. These two settlers believed that they were purchasing animals from a first-class champion herd. The annoying part was, that good heifers from genuinely tested herds could have been obtained at lower prices.

Sometimes in the catalogues of clearing sales records of tested cows are printed in such a way as to make the reader believe that the herd to be sold has been tested and culled, when it may be that it has never been tested in any way.

I have seen young bulls and heifers advertised for sale, and in geniously included in their history were the records of some of the best cows of the breed. The careless reader might easily be made to think that these striking records were made by the dams of the animals offered for sale, though a more careful reading would show that they were those of distant relatives. Many are certainly deceived in this way. It may not be a dishonest practice, but it is certainly very misleading. A buyer who does not understand pedigrees may pay a high price for an animal, thinking it belongs to a heavy-producing family.

It is, indeed, hard to understand why some breeders who are ready to use test records to sell their cows should be so strong in their opposition to testing, their frequent complaint being that it will destroy type—production destroy type! The breeders of dairy-cows in the early days chose what they considered to be the type of an ideal animal in conformation and udder development for heavy production, with other points peculiar to the breed she represented. They carried out their tests by the slow, laborious method of setting each cow's milk separately, churning the cream, and weighing the butter. They were building up herds for dairying purposes, breeding for production; and we are still carrying on that work.

We have had many years' experience with pure-bred stock in all parts of Victoria, and have seen many herds being built up; and after several years of testing and culling we can now claim to have heavy-yielding families second to none in the world. There has been a remarkable improvement in production, appearance, uniformity of type and constitution in the herds under test. I say, emphatically, that the type which our opponents said would be destroyed has improved, and it is not uncommon to see animals at distant country shows equal to those exhibited at the Royal Show in Melbourne.

Testing does not, and cannot, destroy correct conformation; but ideas of type may destroy both production and constitution. To the struggling farmer, the purchase of his first pure-bred stock is of vast importance; especially important is the purchase of a good bull, for it may mean to the buyer either success or failure. A good sire may double the production of a herd in a few years. An inferior sire may mean complete ruin to the owner. When a bull is purchased from an untested herd there is always the chance that he may be useless, even though the owner can quote records from distantly related animals. Therefore, farmers cannot afford to take the risk. One should always endeavour to get stock from a tested herd, and, if possible, short-pedigreed stock should be avoided. The longer they have been bred pure the surer one is that they will transmit their characteristics to the progeny. The ideal is to select from a family which has shown heavy-producing qualities for several generations.

In the Department of Agriculture is a staff of testers who make monthly visits to the herds under test, and these men are acquainted with the different families. They know the conditions under which the records have been produced. They are ready to assist farmers and give them advice in selecting their pure-bred stock. Of course, when a prospective purchaser has decided on the purchase of any particular strain, he should, if possible, visit the herd from which a choice is to be made and inspect the animals for himself.

By writing to the Department of Agriculture farmers may obtain free a copy of the Annual Report on the Standard Herd Test. This will give them the names and addresses of the breeders whose cows were tested during the previous year, as well as the records of their cows.

STANDARD HERD TEST.

Report for Quarter ended 31st December, 1927.

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 214, of which 126 qualify for the certificate.

The amount of butter fat required for qualification varies according to the age of the animal (up to 5 years at time of calving), the standards being as follow :—

Junior 2 year old (under 2½ years at time of calving)	200 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving)	225 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving)	250 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving)	275 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving)	300 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving)	325 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
H. Allez, Moama, via Echuca	2	..	Friesian	St. Alban's Daffodil Mereena..	Mature	651	12.1.27	273	..	6,078	3·81	231·61	350	318, 325, 386
				Springfield No. 7	Mature	1015	13.1.27	273	..	6,971	3·75	261·32	350	380
J. Anderson, Jr., Lyndhurst	1	..	Jersey ..	Canary 17th of King's Vale ..	Jr. 3 yrs.	16582	31.12.26	273	12	4,274	5·46	233·27	250	247
W. H. Atherton, Murraydale	2	2	Jersey	Quality of Meadowvale ..	Mature	10133	7.1.27	273	..	6,878	6·04	415·60	350	293, 346, 375, 400
				Wattle Bloom of Beverley ..	Sr. 2 yrs.	18611	25.2.27	273	16½	6,621	4·97	329·08	225	
W. K. Atkinson, Swan Hill	5	5	Milking Shorthorn	Fairy 2nd of Willow Park ..	Jr. 2 yrs.	..	28.12.26	273	28½	9,077	4·20	381·62	200	
				Dulcie of Willow Park ..	Jr. 3 yrs.	13500	8.1.27	273	..	7,823	3·92	307·02	250	270
				Duchess 5th of Willow Park	Jr. 3 yrs.	13495	18.1.27	273	..	6,512	4·06	264·10	250	259
				Blush of Willow Park ..	Mature	11069	10.2.27	273	..	12,597	4·09	515·40	350	320, 368, 478, 494, 565
				Chance of Willow Park ..	Sr. 3 yrs.	13259	25.2.27	273	18½	6,627	4·44	294·14	275	292

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
F. Austin, Lara	1	1	Jersey ..	Bolinda's Handsome Girl of Linga Longa	Jr. 3 yrs.	16598	28.2.27	273	..	3,873	7·11	275·53	250	249
A. Balsillie, Bendigo	2	1	Jersey ..	Gipsy Lass 2nd of Aberdour	Jr. 2 yrs.	19874	12.3.27	273	..	4,026	5·29	212·92	200	
				Bluebell of Aberdour ..	Mature	14941	20.3.27	273	14½	5,879	5·42	318·84	350	382, 358
Mrs. A. J. Black, Noorat	1	1	Jersey ..	Noorat Sunflower	Sr. 2 yrs.	21135	25.3.27	273	13½	6,140	4·76	292·45	225	
S. Bolton, Mannerim	1	1	Jersey ..	Annie of Enterprise ..	Jr. 2 yrs.	21145	28.1.27	273	17½	5,049	4·92	248·37	200	
A. A. Broad, Sutton Grange	2	2	Jersey ..	Dainty of Grangelea ..	Jr. 4 yrs.	15453	28.12.26	273	22	7,392	5·31	392·36	300	296, 403
				Bunty 2nd of Coliban ..	Jr. 4 yrs.	15485	8.3.27	273	32	9,696	4·98	482·53	300	365, 442
D. Cameron and Sons, Valencia Creek, via Boisdale	5	5	Jersey ..	Studleigh Duchess	Sr. 2 yrs.	18653	17.2.27	273	11	5,048	5·84	294·80	225	249
				Dianthus of Springhurst ..	Mature	12215	18.2.27	273	22	7,215	6·32	455·94	350	274, 393, 380, 439
				Werribee Wyandotte Cream	Mature	12244	21.2.27	273	25	8,454	5·23	442·49	350	334, 475, 559, 558
				Studleigh Dianthus ..	Jr. 2 yrs.	21159	5.3.27	273	17½	5,864	5·91	346·75	200	
				Studleigh Empire	Jr. 2 yrs.	19878	20.3.27	273	..	2,977	7·02	208·85	200	
J. E. Chadderton Hamilton	2	1	Jersey ..	Foxglove of Jersey Meadows	Jr. 2 yrs.	18991	17.2.27	273	..	3,324	5·45	181·31	200	
				Duchess 3rd of Glen Leigh ..	Jr. 2 yrs.	21176	19.3.27	273	20	5,240	4·44	232·69	200	
Capt. P. Chirnside, Oakleigh	3	3	Jersey ..	Fancy Starbright of Bruce Vale	Jr. 2 yrs.	21180	7.2.27	273	19½	6,179	6·18	381·61	200	
				Molly Madeira of Bruce Vale ..	Jr. 3 yrs.	21182	6.3.27	273	18½	7,333	6·88	504·37	250	354
				Brucevale Graceful Countess ..	Jr. 3 yrs.	C.R.	13.3.27	273	19½	6,629	6·73	445·96	200	307

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb	lb.	
J. Clyne, Upper Maffra West	3	2	Jersey ..	Lassie of Elouera	Mature	12236	10.1.27	273	20	6,546	5·94	389·02	350	401, 409
				Fuchsia 2nd of Swansea ..	Jr. 2 yrs.	21190	4.3.27	273	12	4,051	5·67	229·75	200	
				Peach 2nd of Swansea ..	Sr. 2 yrs.	21194	12.3.27	273	11½	3,080	5·09	156·74	225	
Cockbill Bros., Rockbank	1	..	Ayrshire	Fulham Advance	Jr. 2 yrs.	14636	16.3.27	120	4	1,560	4·83	75·28	200	
H. Cowling, Mornington	1	1	Jersey ..	Rarity 11th of Melrose ..	Mature	6944	21.1.27	273	19	7,896	5·39	425·55	350	365, 403, 436, 512, 511
N. C. De La Rue, Weering	1	1	Jersey ..	Carnation of Colac	Jr. 4 yrs.	21239	29.3.27	273	17½	6,441	4·91	316·29	300	267, 317
Department of Agriculture, Burnley	1	..	Jersey ..	Yarra Brae Flash	Jr. 4 yrs.	Vol. 15	29.3.27	240	4	2,940	6·76	198·60	300	357
Department of Agriculture, Werribee	5	3	Friesian	Victoria Corunna	Mature	989	10.1.27	273	16½	8,666	3·68	318·69	350	271, 353, 166, 308
				Victoria Carraway	Sr. 3 yrs.	2066	22.1.27	273	17½	7,687	3·46	265·63	275	273
				Victoria Oakbell	Jr. 2 yrs.	2069	24.2.27	273	23½	7,199	3·57	256·68	200	
				Dominion Kathleen ..	Mature	378	1.3.27	273	8	9,210	4·02	369·90	350	451, 301, 380
				Victoria Joybell	Mature	995	23.3.27	273	32½	10,235	3·82	390·73	350	300, 322, 397
	13	8	Red Polls	Victoria Cutty Sulu ..	Sr. 3 yrs.	1284C	31.12.26	273	12	8,462	5·05	427·66	275	319
				Ornitha	Mature	313B	24.1.27	273	14	7,041	5·20	366·21	350	208, 247, 328, 256, 311, 359
				Victoria Velvicene	Jr. 4 yrs.	968AA	24.1.27	273	15	6,558	4·70	308·10	300	270
				Victoria Reparation ..	Mature	796B	7.2.27	273	35	12,111	3·93	476·46	350	319, 400, 458
				Victoria Bellona	Mature	787B	10.2.27	273	12	6,526	5·28	344·35	350	290
				Victoria Stripe	Sr. 4 yrs.	723A	19.2.27	273	..	7,392	4·01	296·25	325	295, 223
				Victoria Coronation ..	Mature	792B	24.2.27	273	..	7,137	4·33	309·36	350	308, 295, 375
				Victoria Sweetbriar.. ..	Jr. 3 yrs.	1247B	27.2.27	273	11	6,662	4·92	327·50	250	272
				Victoria Coronet	Sr. 3 yrs.	1151A	12.3.27	273	4	4,437	4·99	221·58	275	
				Victoria Crater	Sr. 2 yrs.	1752B	17.3.27	273	12½	5,330	4·58	243·87	225	
				Victoria Magneto	Jr. 2 yrs.	1661A	21.3.27	273	24½	7,248	4·40	318·72	200	
				Victoria Fez	Sr. 4 yrs.	1155A	21.3.27	273	26	9,600	3·63	348·84	325	312
				Victoria Ghenta	Mature	793B	25.3.27	273	23	8,378	4·16	348·62	350	321, 207, 338

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
H. Dettman, Kyneton	1	1	Jersey ..	Goldfield Trixie 2nd ..	Sr. 2 yrs.	18689	15.3.27	273	..	4,800	5·53	265·65	225	273
T. S. Dowson, Hicksborough, via Wonthaggi	1	1	Jersey ..	Warenda Dame Nellie ..	Sr. 2 yrs.	Vol. 15	14.3.27	273	20	6,146	4·35	267·46	225	
Dookie Agricultural College, Dookie	1	1	Ayrshire	Dookie Pretty	Sr. 3 yrs.	14718	6.3.27	273	9	6,080	4·85	294·66	275	187
A. E. Ellis, Archie's Creek	3	1	Jersey ..	Mandolin of Warenda ..	Mature	13226	26.12.26	273	..	5,384	5·45	293·26	350	419, 345
				Canary's Pride	Jr. 4 yrs.	21263	5.3.27	273	17½	5,037	5·60	281·88	300	
				Pearl of Holbrook	Sr. 4 yrs.	15473	5.3.27	273	20½	6,280	5·27	331·22	325	329
N. H. Enders, Stanhope	2	2	Jersey ..	Beatrice of the Wattles ..	Sr. 3 yrs.	18463	24.3.27	273	12½	5,171	5·48	283·31	275	
				Princess of the Wattles ..	Jr. 2 yrs.	21265	24.3.27	273	15	5,388	5·03	271·14	200	
G. Esler, Tongala	1	..	Jersey ..	Linda of Tuerong	Mature	10482	28.12.26	273	..	7,125	4·25	302·48	350	219, 217, 269, 341
A. Evans, Heywood	2	1	Jersey ..	Virginia 3rd of Springhurst ..	Jr. 2 yrs.	18703	12.2.27	273	16½	4,673	5·44	254·27	200	
				Alfalfa of Springhurst ..	Mature	14237	27.3.27	273	17	6,413	5·31	340·67	350	273
T. R. Findlay, Leitchville	1	1	Jersey ..	Twylish Countess of Leven Brae	Sr. 3 yrs.	16641	13.3.27	273	8	6,249	4·79	299·46	275	215, 317
Flack & Gamble, Berwick	1	..	Friesian	Leonora Canary	Mature	547	29.3.27	180*	53½	10,320	3·97	410·13	350	343, 329, 324, 666, 475

* Withdrawn before completion of test.

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
G. Gange, Werribee	6	4	Ayrshire	Roseleaf of Roseleigh ..	Jr. 3 yrs.	13483	29.12.26	273	19	7,832	3·60	282·34	250	265
				Roseleigh Adela	Jr. 2 yrs.	14800	30.12.26	273	14	5,807	4·09	237·66	200	
				Alma of Roseleigh	Sr. 2 yrs.	14801	28.2.27	273	9	4,027	4·23	170·33	225	
				Aileen of Roseleigh ..	Sr. 4 yrs.	13474	12.3.27	273	15½	8,285	4·06	336·64	325	187, 329
				Boronia of Roseleigh ..	Mature	12106	25.3.27	273	..	8,103	4·14	335·18	350	283, 356
				Aletta of Roseleigh ..	Jr. 4 yrs.	13475	26.3.27	273	15½	7,235	4·17	301·92	300	221, 298
N. Gange, Mininera	1	1	Ayrshire	Balm 5th of Carracoorte ..	Mature	9307	25.2.27	273	19	9,140	4·19	382·98	350	333, 375
J. L. Gardener, Welshpool	1	..	Jersey ..	Pansy of Rosemont ..	Mature	10343	17.3.27	273	20½	6,382	4·96	316·62	350	257, 439, 324, 480
Geelong Harbour Trust, Marshall	2	..	Ayrshire	Shamrock of Sparrovale ..	Sr. 4 yrs.	11048	5.1.27	240	11	4,485	4·56	204·42	325	203, 211
				Sparrovale Petal	Jr. 2 yrs.	16694	17.2.27	210	8	3,255	4·94	160·76	200	
Gibson Bros., Trafalgar	2	1	Jersey ..	Buttercup 12th of Ferntree Vale	Mature	9375	9.2.27	273	17½	5,228	5·26	275·23	350	393, 363, 379
				Cream Belle 3rd of Gnarbrook	Mature	9446	5.3.27	273	20	6,738	5·53	372·75	350	315, 320
R. Goodman, Kilmany South	2	..	Ayrshire	Nightingale of Roseneath ..	Jr. 3 yrs.	13515	2.2.27	210	7	2,370	4·12	97·75	250	184
				Camelia of Roseneath ..	Jr. 4 yrs.	16587	27.2.27	273	15	4,269	3·90	166·65	300	172, 244
A. W. Gorman, Alexandra	1	1	Ayrshire	Cathcart Blanche	Jr. 2 yrs.	14839	2.3.27	273	18½	4,961	4·53	224·90	200	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
E. Hall, Tongala	1	1	Jersey ..	Violet of Melwood	Jr. 2 yrs.	21308	20.2.27	273	10	4,286	5·76	246·96	200	
J. E. Handbury and Sons	1	1	Jersey ..	Lassie Fowler of Tooravale ..	Jr. 2 yrs.	18728	10.2.27	273	17	5,156	6·08	313·45	200	
F. Harrison, Frankston	1	..	Jersey ..	Francie of Somerville ..	Mature	15501	18.1.27	273	..	5,310	6·35	337·21	350	276, 296
T. Harvey, Boisdale	4	3	Jersey ..	Bluebell of Jerseyholm ..	Mature	5916	6.2.27	273	11½	5,322	5·76	306·29	350	244, 347, 411, 357, 437, 422, 403, 412
				Daisy 6th of Jerseyholm ..	Mature	5917	7.2.27	273	19	7,550	5·03	379·91	350	332, 415, 373, 392, 419, 436, 464
				Empress 5th of Jerseyholm ..	Sr. 2 yrs.	16650	14.2.27	273	15½	5,609	6·46	362·55	225	
				Empress 3rd of Jerseyholm ..	Mature	10255	24.2.27	273	25½	8,763	5·67	497·20	350	396, 391, 478
G. A. Kent, Archie's Creek	4	1	Ayrshire	Bud of Woolamai Park ..	Mature	7434	1.1.27	240	5½	5,955	4·71	280·25	350	211, 234, 299, 299
				Merry of Woolamai Park ..	Jr. 3 yrs.	12357	8.1.27	273	8½	4,613	4·94	227·68	250	265
				Pet of Woolamai Park ..	Jr. 3 yrs.	12358	15.1.27	273	9½	6,330	4·19	264·98	250	264
				Blossom of Woolamai Park ..	Jr. 4 yrs.	11153	24.2.27	273	4½	6,332	4·68	296·60	300	282, 312
Mrs. E. M. Lennie, Tongala	2	2	Jersey ..	Merella of the Valley ..	Jr. 3 yrs.	17777	6.1.27	273	19	6,312	5·58	351·96	250	247
				Myra 3rd of the Valley ..	Sr. 3 yrs.	18494	15.3.27	273	24½	6,908	5·30	366·25	275	328
Leongatha High School, Leongatha	1	..	Jersey ..	Sunset Star of Dunalister ..	Mature	5927	18.3.27	273	16	5,550	4·83	267·84	350	350, 380, 495, 469, 442, 372, 406, 390, 287

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
Longerenong Agricultural College	1	..	Ayrshire	Wistaria of Longerenong ..	Mature	12439	11.3.27	273	4½	6,279	4·82	302·92	350	233, 235, 179
Mrs. L. Lowing, Tongala	1	1	Jersey ..	Lorna of Hill Crest ..	Mature	9435	19.2.27	273	27	8,453	4·20	354·81	350	
C. G. Lyon, Heidelberg	8	7	Jersey ..	Hawthorn 12th of Banyule ..	Jr. 3 yrs.	14185	30.12.26	273	17	6,016	5·37	322·88	250	364
				Silvermine 30th of Banyule ..	Jr. 3 yrs.	14196	9.1.27	273	17	6,156	5·11	314·87	250	310
				Molly 8th of Banyule ..	Mature	9499	13.1.27	273	36	10,775	5·16	555·75	350	304, 453, 538, 637, 605
				Silvermine 31st of Banyule ..	Jr. 3 yrs.	14197	11.2.27	273	20	6,699	5·57	373·04	250	373
				Molly 17th of Banyule ..	Jr. 3 yrs.	14192	13.2.27	273	18½	7,194	5·98	430·41	250	409
				Silvermine 28th of Banyule ..	Jr. 4 yrs.	11604	6.3.27	273	16	6,143	5·22	320·54	300	348, 446
				Tiddlewinks of Banyule ..	Mature	11613	7.3.27	273	28½	9,657	5·98	577·70	350	441, 462
				Hawthorn 10th of Banyule ..	Jr. 4 yrs.	11584	25.3.27	273	8	5,141	5·72	294·28	300	330, 524
Miss C. E. McClelland, Tunstall	1	1	Jersey ..	Peggy of the Elms ..	Jr. 2 yrs.	21446	18.1.27	273	18	4,789	4·95	237·03	200	
H. V. McLeod, Tyrendarra, via Portland	4	3	Jersey ..	Sweet Bell of Rochdale ..	Mature	9794	30.12.26	273	12½	6,600	5·74	378·55	350	379
				Hawthorn 8th of Banyule ..	Mature	9484	2.1.27	273	13½	6,417	5·37	344·42	350	354, 400
				Cora 2nd of Kameruka ..	Mature	10337	7.2.27	273	21	8,480	6·74	571·19	350	
				Virginia 2nd of Springhurst ..	Jr. 4 Yrs.	14261	9.2.27	273	15	5,373	5·74	308·44	300	238
Mesdames McWhae & Silvester, Merino	3	2	Guernsey	Yarra View Meadow Sweet ..	Sr. 2 yrs.	1269	1.1.27	273	11½	4,160	5·00	207·81	225	
				Yarra View Maud ..	Jr. 2 yrs.	1268	20.1.27	273	17	5,241	5·65	295·95	200	
				Yarra View Dewdrop 2nd ..	Jr. 2 yrs.	1263	2.2.27	273	22	6,021	4·64	279·77	200	

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
A. J. Mapleson, Jindivick	1	1	Jersey ..	Twilight of Hazeldale ..	Jr. 4 yrs.	15552	10.2.27	273	21½	6,840	4·96	339·06	300	
T. Mesley, Dalyston	3	3	Jersey ..	Agnes 2nd of Warenda ..	Mature	13375	12.2.27	273	22	7,195	6·05	435·38	350	385, 514, 466
				Madrigal of Warenda ..	Sr. 4 yrs.	15559	26.3.27	273	29½	9,372	5·85	548·20	325	486, 450
				May Song of Warenda ..	Sr. 2 yrs.	21516	29.3.27	273	22	6,123	6.56	401.74	225	
Mrs. L. Orchard, Grahamvale	7	..	Jersey	Jessie of Jersey Vale ..	Jr. 2 yrs.	21540	26.1.27	273	11	3,331	5·65	188·17	200	
				Buttercup of Jersey Vale ..	Mature	11657	22.2.27	273	18	5,144	4·83	248·40	350	187, 323, 352, 262
				Doreen of Jersey Vale ..	Sr. 4 yrs.	13763	14.3.27	273	17	3,965	4·72	187·17	325	136, 209, 180
				Pansy of Grahamsvale ..	Mature	5330	16.3.27	273	11½	3,423	4·55	155·78	350	227, 213, 346, 226, 202, 267, 287, 223, 184
				Melba of Jersey Vale ..	Jr. 2 yrs.	21542	18.3.27	273	6	3,228	5·26	169·85	200	
				Violet of Jersey Vale ..	Sr. 3 yrs.	18888	19.3.27	273	10	3,825	5·55	212·18	275	170, 168
				Rose of Jersey Vale ..	Mature	9590	28.3.27	273	18½	5,009	4·43	222·03	350	198, 236, 225, 321, 251
Mrs. A. E. Overend, Sale	3	3	Jersey ..	Sparkle 10th of Jerseyholm ..	Jr. 2 yrs.	18774	19.1.27	273	19½	5,865	5·39	316·23	200	
				Sparkle 9th of Jerseyholm ..	Sr. 2 yrs.	13358	21.1.27	273	15½	5,013	6·12	306·69	225	
				Peggy of Bon Accord ..	Jr. 2 yrs.	21545	11.2.27	273	15½	4,247	6·13	260·41	200	
J. Padgett, Werribee	1	1	Friesian	St. Albans Ina Sylvia ..	Sr. 2 yrs.	2593	19.1.27	150*	53	8,445	3.68	310.68	225	
W. Parbury, Warburton	8	2	Jersey ..	Verbena 7th of Brookfield ..	Jr. 4 yrs.	15596	2.1.27	273	20½	6,267	4·48	281·04	300	299
				Nancy Rosalind of Brookfield	Mature	18509	7.1.27	273	18½	7,038	4·78	336·40	350	348
				Sunshine 7th of Brookfield ..	Jr. 2 yrs.	18898	9.2.27	273	16½	4,103	4·76	195·34	200	
				Songstress 7th of Brookfield	Jr. 2 yrs.	18896	10.2.27	273	11	3,186	5·23	166·76	200	
				Sunshine 9th of Brookfield ..	Jr. 2 yrs.	18900	11.2.27	273	14	4,079	4·79	195·49	200	
				Clementine 3rd of Brookfield	Jr. 2 yrs.	21552	15.2.27	273	17	4,175	4·63	193·29	200	
				Rosebud 6th of Brookfield ..	Jr. 2 yrs.	18893	18.2.27	273	20	4,798	4·75	228·13	200	
				Verbena 9th of Brookfield ..	Jr. 2 yrs.	18902	23.2.27	273	16	4,782	4·84	231·64	200	

* Exempted from Test on account of sickness.

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
J. Phillips, Murraydale	1	..	Jersey ..	Jessie 11th of Ferntree Vale	Mature	9638	2.2.27	273	25½	7,752	4·03	312·29	350	296, 384, 354, 412, 427
J. Plattfuss, Tongala	2	2	Friesian	Yorkshire Oakwood Togo ..	Jr. 2 yrs.	2336	4.1.27	273	..	8,618	3·46	297·77	200	
				Springfield Ideal Keys ..	Mature	980	20.3.27	273	35	13,421	3·19	428·11	350	211, 257, 354
D. and M. A. Poole, Caldermeade	1	..	Ayrshire	Bona Vista Marcia	Jr. 4 yrs.	12428	1.3.27	273	16	5,414	4·08	220·81	300	303, 316
Quigley and Bennet, Yinnar	1	..	Jersey ..	Kirsty 14th of Jerseyholm ..	Sr. 4 yrs.	12945	10.1.27	273	10	4,353	5·80	252·31	325	306, 297
F. Raggatt, Euroa	1	..	Jersey ..	Colina of Methven	Mature	12906	22.3.27	273	14	5,937	5·67	336·54	350	308, 324, 425
Miss H. E. Raleigh, Pakenham Upper	1	1	Jersey ..	Fuchsia 7th of St. Albans ..	Jr. 2 yrs.	21595	20.3.27	273	13	4,442	5·11	226·85	200	
D. Ralston, Euroa	1	1	Ayrshire	Lady Daphne of Ben Kell ..	Jr. 2 yrs.	14086	25.2.27	273	15½	5,216	4·17	217·65	200	
W. A. Regnier, Poowong	1	..	Friesian	Clover Hill Southern Maid ..	Jr. 4 yrs.	App. 4	2.1.27	273	14½	5,148	4·16	214·11	300	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
J. D. Read, Springhurst	13	11	Jersey ..	Jonquil 2nd of Springhurst ..	Jr. 2 yrs.	18932	5.3.27	273	13	4,494	5·97	268·47	200	
				Clover 5th of Springhurst ..	Jr. 2 yrs.	21604	8.3.27	210*	21½	4,335	5·18	224·35	200	
				Chillie of Springhurst ..	Sr. 3 yrs.	14241	8.3.27	180†	30	6,195	4·57	283·26	275	309, 412
				Bouvardia 3rd of Springhurst	Jr. 2 yrs.	21603	11.3.27	273	12	4,629	4·24	196·10	200	
				Chillie 2nd of Springhurst ..	Jr. 2 yrs.	18926	14.3.27	273	16	6,027	4·86	293·15	200	
				Alsyke 2nd of Springhurst ..	Mature	10437	18.3.27	273	16½	5,703	6·13	349·58	350	255, 291, 487, 328, 541
				Hakea of Springhurst ..	Jr. 2 yrs.	18930	18.3.27	273	14	5,091	4·42	225·27	200	
				Mayflower of Springhurst ..	Jr. 2 yrs.	18934	19.3.27	210*	23½	3,825	5·69	217·64	200	
				Lyonsia of Springhurst ..	Jr. 2 yrs.	18933	21.3.27	273	14	4,687	5·85	274·01	200	
				Trefoil 4th of Springhurst ..	Sr. 2 yrs.	16972	22.3.27	273	15½	6,117	4·89	299·14	225	
				Chrysanthemum 2nd of Springhurst	Jr. 2 yrs.	18927	23.3.27	273	10½	4,158	5·59	232·35	200	
				Nardoo of Springhurst ..	Jr. 2 yrs.	18936	29.3.27	273	15½	5,463	5·51	300·77	200	
				Gladiolus 2nd of Springhurst	Sr. 2 yrs.	18929	29.3.27	273	19	6,795	5·90	400·67	225	
W. S. Richardson, Riddell	2	2	Jersey ..	Sutton Lea Latricia ..	Jr. 2 yrs.	Vol. 15	23.3.27	273	11	4,320	5·45	235·41	200	
				Silvermine 34th of Banyule ..	Jr. 2 yrs.	18813	24.3.27	273	13½	5,129	5·48	281·31	200	
Miss S. L. Robinson, East Kew	3	1	Jersey ..	Kyora Velveteen 3rd ..	Jr. 4 yrs.	18948	6.2.27	273	..	3,860	5·56	214·59	300	236, 317
				Kyora Lady Montrose ..	Jr. 2 yrs.	C.R.	9.3.27	273	..	4,572	5·26	240·32	200	
				Mill Brown Duchess ..	Mature	11689	24.3.27	273	..	4,283	5·03	215·60	350	208, 385, 300
C. M. Runciman, Murraydale	2	1	Jersey ..	Canary 7th of Goulburn ..	Jr. 2 yrs.	19870	27.1.27	273	..	3,850	6·40	246·40	200	
				Magnolia Wyndotte of Lea Hurst	Jr. 2 yrs.	21644	9.2.27	273	8½	3,364	5·45	183·47	200	

* Sold before completion of test.

† Died before completion of term.

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
A. H. Schier, Kernot	16	..	Ayrshire	Scotswood Adeline	Mature	10291	30.12.26	180	6½	3,195	3·87	123·51	350	234, 287
				Lady Virtue 2nd of Wilson House	Mature	6964	10.1.27	273	11½	6,480	3·64	235·91	350	362, 283
				Scotswood Merry Lass ..	Jr. 2 yrs.	15488	16.1.27	240	4	2,280	5·02	114·37	200	
				Scotswood Merline	Sr. 3 yrs.	15487	16.1.27	240	4	3,257	4·68	152·53	275	221, 191
				Fine Quality of Gleneira ..	Mature	7711	22.1.27	273	8½	4,157	4·92	204·65	350	187, 209, 262, 264, 294, 207
				Scotswood Boronia ..	Jr. 4 yrs.	15472	24.1.27	273	..	4,715	5·13	241·91	300	202
				Scotswood Modena ..	Jr. 3 yrs.	15489	28.1.27	273	11	4,835	4·41	213·33	250	231
				Scotswood Bonnie	Jr. 3 yrs.	16604	31.1.27	273	20	4,724	4·88	230·74	250	
				Scotswood Dainty	Jr. 3 yrs.	15475	31.1.27	240	4	2,805	4·48	125·57	250	191
				Scotswood Bud	Jr. 2 yrs.	15473	7.2.27	273	14½	4,106	4·25	174·59	200	
				Scotswood Maybelle ..	Sr. 3 yrs.	15486	8.2.27	240	4	2,205	4·52	91·56	275	
				Bettsie of Inverleigh ..	Mature	10285	8.2.27	273	4	5,535	4·33	239·94	350	213, 242, 191, 290, 312
				Scotswood Model	Jr. 4 yrs.	14155	25.2.27	240	8½	4,740	4·09	194·05	300	275, 212
				Scotswood Better Still ..	Jr. 2 yrs.	15470	21.3.27	273	8½	4,460	3·98	177·55	200	
				Scotswood Maimie's Mischief	Jr. 2 yrs.	15483	23.3.27	273	7	3,410	4·95	168·74	200	
				Scotswood Myriad	Sr. 3 yrs.	15492	26.3.27	273	18½	5,471	4·34	237·17	275	
A. Schlipalius, Kilmany	1	..	Jersey ..	Princess Ida of Cloverfield ..	Mature	11709	4.3.27	273	14	3,884	5·76	223·71	350	259, 354, 355
C. L. V. Sharp, Murrabit	1	..	Friesian	Burnbank de Kol. Kroons ..	..	2119	25.1.27	273	17½	5,172	3·30	170·42		
Simpson and Son, Lower Fern Tree Gully	3	1	Jersey ..	Music of Wilgo	Jr. 4 yrs.	16954	18.1.27	273	16½	5,894	4·27	251·46	300	
				Leonie 2nd of Clarendon Eyre	Mature	9579	9.2.27	273	15	5,559	4·75	263·89	350	253, 351
				Leonie of Clarendon Eyre ..	Mature	9578	4.3.27	273	21	7,291	5·34	389·60	350	353, 418, 393
O. J. Syme, Macedon	2	2	Friesian	Bolobek Antonia	Jr. 4 yrs.	1183	2.2.27	273	14	14,727	3·39	499·80	300	244, 398
				Bolobek Trixy	Jr. 2 yrs.	2106	27.2.27	273	37	14,642	3·73	545·45	200	

STANDARD HERD TEST—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
Telford Bros., Kyaeram	2	2	Ayrshire	Dolly 4th of Glengowrie ..	Mature	5999	8.1.26	273	26½	10,028	4·47	488·18	350	376, 429, 513, 546
				Hyde Park Thelma ..	Jr. 2 yrs.	16358	5.3.27	273	19½	5,449	4·71	256·68	200	
L. W. Thompson, Pakenham	2	1	Jersey ..	Vanilla 15th of Melrose ..	Mature	10525	13.1.27	273	16	5,456	6·07	330·94	350	296, 302
				Canary of Mendip	Jr. 2 yrs.	21698	3.2.27	273	18½	4,716	6·13	289·22	200	
F. Trevaskis, Tongala	2	2	Jersey ..	Lady Meadowsweet of Bruce Vale	Sr. 2 yrs.	18662	13.1.27	273	13½	4,437	7·12	315·76	225	320
				Lady Golden 2nd of Bruce Vale	Sr. 3 yrs.	21181	21.3.27	273	17	5,442	5·81	316·02	275	311
J. T. Tweddle, Berwick	2	..	Friesian	Burnbank Lapolka Alcartra ..	Sr. 2 yrs.	C.R. 1518	31.12.26	150	4	1,755	4·60	80·71	225	243, 284, 287
				Burnbank Dutch Princess ..	Mature		9.2.27	273	13	5,101	4·16	212·29	350	
C. S. Walker, Swan Hill	1	1	Jersey ..	Warwick Beauty	Jr. 2 yrs.	19012	3.1.27	273	..	6,866	4·81	330·07	200	
H. L. Webb, Sunbury	4	1	Ayrshire	Myra of Holly Green ..	Sr. 4 yrs.	11499	20.1.27	273	8½	5,891	4·25	250·13	325	259, 244, 254
				Melody of Holly Green ..	Mature	11496	8.2.27	273	9½	4,634	5·16	239·20	350	240, 246
				Mirth of Holly Green ..	Sr. 2 yrs.	14278	13.3.27	273	12	5,483	4·11	225·46	225	
				Meg of Holly Green ..	Jr. 2 yrs.	14277	18.3.27	273	8	3,476	4·29	149·01	200	
A. C. Willis, Paschendale, via Merino	3	1	Jersey ..	Morning Light of Clover Flat	Mature	13410	3.3.27	273	4	3,722	5·58	207·87	350	232
				Sweet Lass of Clover Flat	Mature	13411	4.3.27	273	4	3,092	5·49	169·82	350	236
				Dainty Lass of Carney Dell ..	Jr. 2 yrs.	19022	21.3.27	273	15	4,491	4·57	205·24	200	

Standard Herd Test—*continued.*

Owner.	No. completed Test.	No. Certificated.	Breed.	Name of Cow.	Age Standard.	Herd Book No.	Date of Calving.	Days in Test.	Milk last Day of Test.	Milk.	Average Test.	Butter Fat.	Standard required.	Previous Yields of Butter Fat in lbs.
									lb.	lb.		lb.	lb.	
J. V. M. Wood, Heidelberg	8	8	Jersey ..	Betty of Sunnyford ..	Jr. 4 yrs.	16765	8.1.27	273	18	6,209	5·95	369·52	300	
				Tressy of Sunnyford ..	Jr. 3 yrs.	16766	27.1.27	273	21½	6,488	6·20	401·97	250	
				Felicity 4th of Clarendon Eyre	Jr. 2 yrs.	9575	15.2.27	273	19	6,258	5·41	338·26	200	
				Dairy Maid 6th of Waterloo Farm	Jr. 2 yrs.	14994	21.2.27	273	12½	4,899	6·52	319·61	200	
				Farringdon Snows Petal ..	Jr. 3 yrs.	C.R.	26.2.27	273	15	5,538	5·97	330·67	250	
				Clarendon Eyre Princess Ida	Jr. 2 yrs.	C.R.	3.3.27	273	11½	4,073	5·67	230·90	200	
				Bluebell of Farringdon ..	Sr. 3 yr .	21771	3.3.27	273	21	5,567	5·69	316·73	275	
				V. C. Ohio	Sr. 2 yrs.	22355	14.3.27	273	16	5,229	5·18	271·07	225	
W. Woodmason, Oakleigh	3	3	Jersey ..	Vanilla 11th of Melrose ..	Mature	7550	5.1.27	273	19	7,550	5·35	404·10	350	303, 362, 369, 424, 329, 419, 376, 418
				Melrose Graceful Duchess 39th	Sr. 2 yrs.	Vol. 15	4.2.27	273	17½	5,754	5·79	333·43	225	
				Graceful Duchess 19th of Melrose	Mature	7540	20.2.27	273	..	7,448	6·16	458·81	350	325, 404, 438, 433, 466, 360, 486

CURING TOBACCO LEAF.

By G. E. Marks, Assistant Tobacco Expert.

There are two general methods of harvesting or gathering tobacco—one in which the whole plant is cut, and known as stalk-curing; the other where the individual leaves are picked, and spoken of as leaf-curing or priming. The leaf-curing or priming method is regarded as the more satisfactory, as a more uniform cure will result if the barn be filled with leaf of similar maturity. This is especially so in the case of the heavier types of leaf, which can be cured to a brighter colour, and which, under this method, are more easily deprived of the extra amount of sap they contain.

Shortly after the tobacco has been topped the bottom leaves will commence to ripen. On sandy soil this is indicated by a change in colour from a dark to a pale-green; while in the case of plants grown on the rich, heavy soils, the leaves become mottled with yellow spots. If these bottom leaves be left on the plant until the top ones are ripe, they will start to decay or dry off, resulting in loss of both weight and quality. In leaf harvesting, the leaves are picked as they ripen, the first four bottom leaves, say, being taken from a plant at each picking. In this way the whole of the crop will be gathered in three or four pickings.

When the ripe leaves have been broken from the plants they should be placed in baskets, or small bundles in hessian, and then carted to the barn, where they are tied on sticks.

There are several methods of "sticking" the leaf. With one known as the snow method, sticks of about 4 ft. 6 in. long are made from 2-in. by 1-in. hardwood, with No. 12 steel wire points projecting about 7 inches on both sides and spaced about 6 inches apart. Thus, a stick of this kind would have fourteen points, each of which would hold about eight leaves. This method is generally agreed to be the best, as the leaves are kept separate and straight—an important factor in curing high-grade tobacco leaf. These sticks are placed in the barn and spaced on the tier beams with their points just touching.

The string method of tying the leaf is the cheapest and simplest, and is the one most generally used. The string used is of medium thickness and is tied to the stick, say, 4 inches from the end. The stick, which is about 4 ft. 6 in. long, is supported at each end by a post about 4 feet high, the posts being notched on the tops to receive the stick. A bench at right-angles to the stand holds the stick. On this bench the bundles or baskets of leaves are placed. One or two persons hand the leaf to another, who hitches them on to the stick in bundles or groups of two or three, according to size, by wrapping the string once around the butts of the ribs of the leaves, forming a figure 8, as it passes from one side of the stick to the other. The bundles or groups of leaf are about 2 inches apart on both sides of the stick. If too many leaves be placed in a group they will sweat and discolour, as well as retard drying. When the sticks are hung in the barn they should be spaced about 6 inches apart on the tier beams.

Stalk curing is a method by which the plants are split down the centre of the stalk from the top to the bottom leaf, and then chopped off about 3 inches below the slit.

The plants are then straddled across the sticks, about six or eight being placed on each, the number varying according to size. It is customary in some places to prime the first four or five bottom leaves and then stalk-cure the remainder. This preserves the bottom leaves, which otherwise would deteriorate before the top ones were ripe.

It is essential that the barn should be filled with leaf as uniformly ripe as possible, and, if practicable, it should be filled in one day. If by chance two days are necessary, then the top tiers in the barn should be reserved for the leaf picked on the second day. When the leaf is thus allowed to stand over-night it should not be piled in heaps more than 1 foot deep. It should be stacked in single rows to allow free circulation of air from each side. This will prevent heating.

If the weather be warm, the partly-filled barn should be left open over-night, to prevent or hinder the yellowing of the leaf. During the process of harvesting the leaf should not be allowed to remain in the hot sun more than a few minutes, as there is danger of scalding; much damage is often done in this way.

The tobacco plant is greatly affected by the texture and physical properties of the soil, and this accounts to a large extent for the distribution of the different types. But the grade of the individual types will depend to an equal extent upon the cultural methods and the kind of fertilizer used, as well as the skill displayed in the curing of the crop. A rich, heavy, silty soil will produce big, heavy, coarse leaf, suitable only for strong dark-smoking tobacco. On the other hand, a poor, light-coloured, fine sandy soil will produce a fine silky-textured leaf, well suited for the manufacture of mild-smoking tobacco and cigarettes.

It can be readily understood that no one method of curing is adaptable to all classes of tobacco. For example, no wise grower would attempt to cure tobacco grown on the rich soils by the fast process of flue-curing, as is used in curing the bright-yellow tobaccoes grown on the light sandy soils. Experience has shown him that the cured tobacco would be of a good colour, but all its natural qualities would have been sacrificed, and a rich colour in a heavy leaf is of little advantage owing to its unsuitability for manufacture of cigarettes or light-cut tobaccoes. The aroma of such naturally-dark leaf would be spoiled by the fast-curing, and, consequently, would be unfit for pipe smoking.

The question of aromas has recently provoked much discussion, and it has been scientifically shown and generally admitted that much improvement can be achieved in this direction during the curing process.

The following is only a general method of flue-curing, as space does not permit of details, each different type of leaf requiring different treatment. It has been pointed out already that the sandier the soil the more suitable the leaf is for flue-curing, and that the best cigarette leaf is produced only on light sandy soil under the best cultural methods combined with favorable climatic conditions. Rich clay or silty soils produce heavy coarse leaf, which is better suited to fire-curing or a very slow process of flue-curing.

The person in charge of the tobacco decides on either cutting or priming, and fills a barn, say, 16 feet square and 16 feet high, with 500 4-ft. sticks, each containing about 80 uniformly ripe leaves, all picked in one day and placed in the barn before wilting. All ventilators in both roof and at ground level, and also doors and windows, are closed.

The fires are then lighted in the two furnaces, which are provided with ample heating flues, and the temperature is raised to 95 deg. F.

in four hours, and kept at this temperature until the leaf is about half yellow. This usually requires about 24 hours. During the whole of this period the atmosphere in the barn should be kept quite moist. This can be done by applying water to the floor, though the leaf should supply its own moisture if the barn be air-tight.

After the leaf has attained this light pea-green colour the ventilators, both in roof and at floor level, should be slightly opened and the temperature raised in six hours to 110 deg. F., and it should be kept at this temperature until the tips of the leaves commence to curl up and are of a bright-yellow colour.

At this stage the ventilators should be opened sufficiently to free the room of all surplus moisture, for when the leaf is yellow no sweat should be allowed to accumulate in the barn, as such moisture would cause discolouration of the yellow leaf. After the leaves have commenced to curl up, and at the same time have attained almost a lemon-yellow colour, the temperature should be raised to 120 deg. in about six hours, and kept at this until the leaf is dry, when the temperature may be raised to 170 deg. in seven hours, to complete the drying of the stems and stalks.

ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.L.S., Pomologist.

The Orchard.

Green Manures.

If a cover crop of leguminous plants is required for green manuring a start at planting may now be made. This can be done only when all the fruit has been gathered from the trees. An early crop is a distinct advantage. The cover crop should make a good growth before the winter sets in, as the plants make very little headway in the cold weather, and they require to be ploughed in as soon as the ground is dry enough in early spring. It will thus be seen that it is necessary to get a good autumn growth, as dense as possible, and one which will adequately cover the surface before winter.

Cultivation.

Should the weather remain hot and dry it will be very necessary to give the land surface a good stirring, so as to conserve water supplies. Where fruit crops have been gathered a start may be made late in the month with the autumn ploughing; whatever ploughing is done should be left as rough as possible.

Pests.

No codlin moth-affected or diseased fruit of any kind should be left on the ground after the crop has been gathered. These should all be destroyed by boiling.

All rust-affected foliage and fruit of plum and peach trees, as well as all other stone fruits that have been attacked by this and other fungus diseases, such as shot-hole, &c., should be burned if possible. This will minimize the possibility of future attacks.

The Vegetable Garden.

Autumn weeds must be kept out of the kitchen garden. These rapidly grow, and remain as robbers right through until the spring time.

The section should be well dug over for planting winter crops. Before digging a light sprinkling of bonedust and a good top dressing of stable manure should be spread on the surface. These may then be dug in, as they provide humus for the soil. Large plots should be avoided in winter; where such occur a path should be run down the centre. This will provide more efficient drainage. The beds, too, may be more raised than in the summer time.

Early onions may be planted out in the beds, and, if not already done, onion seed should be planted at once.

All classes of seedlings may be planted out, and seeds of lettuce, early peas, beet, carrots, radish, cabbage, cauliflower, and swede turnip may be sown.

Asparagus beds should be cleaned up and cut down as soon as the berries begin to colour. Celery rows should be kept earthed up: rhubarb beds should be given a dressing of manure to encourage the coming winter crop, and new rhubarb plantations may now be established.

The Flower Garden.

All classes of spring-flowering bulbs may now be planted. In bulb planting the bulbs should not come in contact with any manure. The manure should, some time previously, have been dug well in, and mixed with the soil, and all heat should have disappeared. If manure is required it should be placed below the bulb, so that the roots may ultimately penetrate to it. Bulbs thrive in sandy soils, and where the soil is heavy a little sand may be added to advantage. Bulbs should not be planted too deeply; the depth to plant is generally regulated by the size of the bulb. Such bulbs as freesias may be covered with only an inch of soil, while larger bulbs may be somewhat deeper.

The increasing prevalence of both bulb mite and rhizoctinia fungus in attacking bulbs makes it a matter of urgency that all bulb gardens and plots should be well dressed with lime before the bulbs are planted. The lime should be dug into the soil; and after the bulbs have been planted, a top-dressing should also be given. Each dressing need not exceed 2 ozs. per square yard. Clifts's manurial insecticide is also good.

Dahlias and chrysanthemums may be fed with liquid manure, or mulched with stable or poultry manure. In any case the feeding should not be too strong nor too frequent, and it should always be withheld before the flowers come.

All hardy annual, biennial, and perennial seeds may now be planted. Among these are dianthus, candytuft, sweet peas, Iceland poppies, anemone, ranunculus, stock, wallflower, columbine, foxglove, phlox, penstemon, pansy, gaillardia, &c.

Wherever aphis and red spider occur the plants should be sprayed with benzole emulsion, nicotine, pestend, or soaperine, or some other preventive in order to protect the coming flowers. Mildew attacks on the rose should be warded off by the use of sulphur. The sulphur may be either dusted on the plant or it may be scattered on the ground around and under the plant.

March is one of the best months for transplanting evergreen plants of all classes, trees, shrubs, and palms. The roots of the transplanted plants should be disturbed as little as possible, while the roots of those transplanted from pots should be well uncoiled and set out before planting.

The soil is now warm, and the roots will quickly take hold and grow. They are thus established for the winter, and will give little or no trouble in the subsequent summer heat and dryness.

In preparing the soil for planting the trees care should be taken not to dig small holes. A small hole is simply a "pot hole," in which the winter water accumulates, and as a result the young tree roots are rotted.

A large hole should be dug; or better still, the whole planting area should be well cultivated all over, and the plants or trees then set out in this cultivated area.

REMINDERS FOR APRIL.

LIVE STOCK.

HORSES.—Those stabled should be fed liberally. Food of a more stimulating nature can now be given to get them well over the "changing coat" season. Those doing fast or heavy work should be clipped; if not wholly, then trace high. The legs should not be clipped. Those not rugged on coming into the stable at night sweating freely should be wiped down and in half-an-hour's time rugged or covered with bags until the coat is dry. Yearling colts if vigorous and well grown may be castrated. Weaned foals should have a little crushed oats daily, if available. Horses to be turned out during winter should not be clipped. Their mouths and feet should be examined and attended to where necessary.

CATTLE.—As the nights become colder the dairy cows should be rugged. The rugs should be removed in day-time when the shade temperature reaches 60 degrees. If new grass is plentiful, give a ration of hay or straw, whole or chaffed, to counteract the purging effects of young grass. It will be found profitable to give a few pounds of bran, crushed oats or pollyfeed, in addition to other food to all cows giving a fair quantity of milk. Algerian oats should be sown on suitable land for grazing off in the winter. Sow a mixture of oats, rye, and tares or peas for winter fodder or to fill silos. Irrigated lucerne may be scarified in autumn, Algerian oats sown, and in this way good feed provided for cows in winter. Only exceptional cows or those required for city milk supply should be served between now and July. Within the next two or three months is the best time for cows to calve, as they will pay to feed through the winter, give the best returns for the season, and be dry when the feed is dry and at its worst. Take care that salt lick previously recommended is available. One or two pounds of linseed cake or meal given daily should be found beneficial. In addition to its feed value, the oil in the cake or meal will counteract the effect of dry feed, which is liable to cause impaction. Calves should have lucerne hay or crushed oats when grass is not plentiful.

PIGS.—Sows not already served should be put to the boar. Supply all pigs with plenty of bedding, and see that sties are warm and well ventilated. Supply sows liberally with grain. Castrate young boars as early as possible. Pigs should be highly profitable now, as pork is very dear. Rape, barley (especially skinless, oats, &c., may be sown for grazing during winter. There is a great shortage of high-class bacon suitable for Wiltshire sides. This must be rectified by breeding on better lines and feeding properly. It is proved that first cross pigs, the progeny of two pure breeds, produce better bacon and more cheaply than subsequent crosses, so it should be the aim of all to work into pure sows as rapidly as possible, and by using the Large York boar on pure-bred sows, Middle York or Berkshire for preference, the class of pigs will more nearly approach the requirements of the curers.

Sheep.—Merino and fine cross-bred ewes, if mated early (November-December), will lamb from now on. Particularly will this apply to early shorn ewes joined in the north of the State, as they have a natural tendency to take the rams early. These fine-woolled ewes, if in lamb to a Lincoln, Romney Marsh, Shropshire, Dorset Horn, English and Border Leicester, or Suffolk may have trouble at lambing. Close attention should be given early morning and evening during the lambing period, with a view to avoiding losses in both ewes and lambs; if trouble is experienced, attention should be given at midday also. Heavy-woolled ewes cast easily, and need constant attention. Crutching is usually undertaken this month, and a safe rule to follow is to have all ewes that are to lamb crutched one month before lambing. Lambing is usual (considering the varied conditions of the different districts of this State) from March to September, but flock owners should arrange their lamb-dropping date to suit their particular country. True, they have no control over the season, but they would be wise to strike an average, considering the question of feed and water. If ewes are attentive mothers, and the flock owner has given them all reasonable practical attention, any lambs that die will not be a great loss, as they would be probably poor culls if saved by more expensive treatment and cost. Foxes, eagle hawks, and stray dogs are often the cause of losses at lambings and should be guarded against where possible. Give purgative drenches at first sight, if ewes appear ill in any way. Ewes after difficult parturition or retention of after-birth can often be saved by flushing out with ½ oz. of lysol to 3 parts of warm water. Fresh pasture, sown grasses, or green crops should be reserved for ewes with their lambs a few days after lambing. Marking of the lambs can be undertaken one week after birth, but it is usual to wait for about two to three weeks after the first lambs are dropped before having a general marking. A second marking at about six weeks usually completes the operations in this direction for the flock. In marking sheep cleanliness is essential, and it is wise to erect yards for the purpose in the paddock instead of using old sheep-yards where disease may lurk in the dust, etc. In districts where conditions make a second dipping necessary, see that it is done before the weather becomes too unsettled, and certainly in the case of lambing ewes, well before or after lambing.

Poultry.—Soft food aids moult; add a teaspoonful of linseed to each bird's ration once daily. The more exercise the hens get the better they moult. The mash is mixed with one packet of Epsom salts to twenty birds once a week. Keep a sharp look out for chicken pox. Forward pullets should now be in their winter quarters, with plenty of scratching litter, and fed liberally—including ration of animal food, dried milk, or separated milk. Grit, shell, and charcoal should always be available. Feed some succulent green food after the grain food at night.

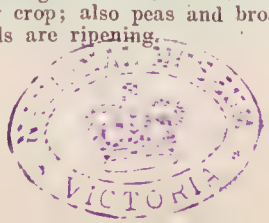
CULTIVATION.

Farm.—Dig potatoes as they mature. Cart out and spread stable manure. Finish preparation of land for main cereal crops. Sow Chou Moellier seed in beds for transplanting. Sow a mixture per acre for green feed during the winter months for the dairy herd, such as:—1½ bushels, Oats; ½ bushel, Cape Barley; ½ bushel, Tick Beans; ½ bushel, Pease. Sow Giant Drumhead Cabbage for transplanting (1 lb. sufficient for 1 acre, in rows 3 feet apart); provided the soil is in good friable condition, plants from seed sown last month should be planted out. Early sowings of wheat and oats begin; also rape for winter feed or green manuring. Prepare clean seed-bed for lucerne; and sow Hunter River, Arabian, or Peruvian seed, free from dodder, in drills 7 inches apart and at the rate of 12 lb. of seed per acre. Sow permanent pastures with grasses and clovers.

Orchard.—Prepare land for planting; plough deeply and sub-soil. Plant legumes for green manure. Plant out strawberries. Clean up Codlin Moth from trees as soon as all fruit is gathered.

Flower Garden.—Plant out evergreen shrubs, trees, and Australian plants, divisions of herbaceous plants, seedlings, layers, and rooted cuttings. Feed chrysanthemums with liquid manure weekly until flowers begin to open. Prepare land for future plantings of roses and shrubs. Keep dahlias tied to stakes.

Vegetable Garden.—Plant out seedlings from the seed beds. Dig all vacant spaces roughly. Sow onions for early crop; also peas and broad beans. Clean out asparagus beds wherever the seeds are ripening.



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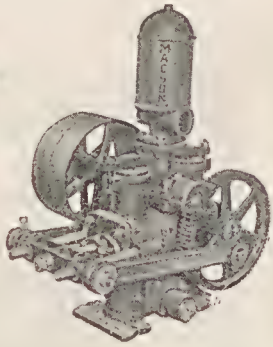

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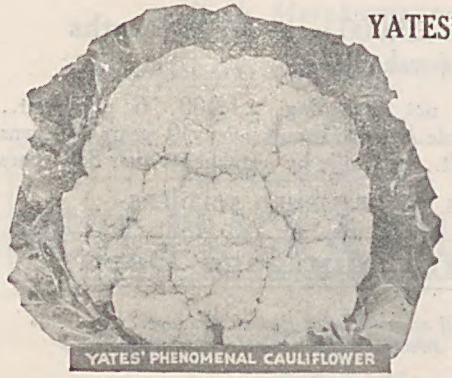

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